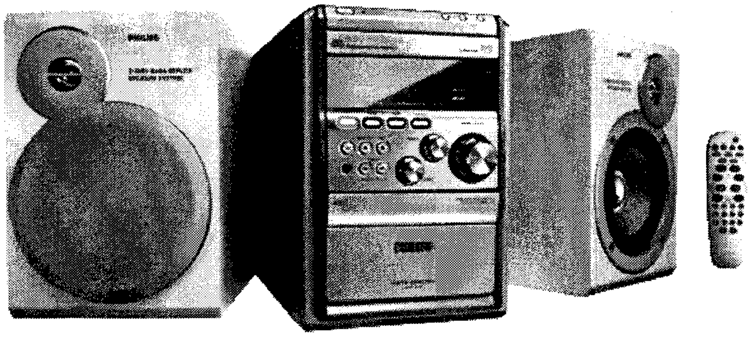
Micro System MCM5/22/25/37

Service
Service
Service



Service Manual

MP3-CD PLAYBACK MP3

COMPACT disc DIGITAL AUDIO

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**CLASS 1
LASER PRODUCT**

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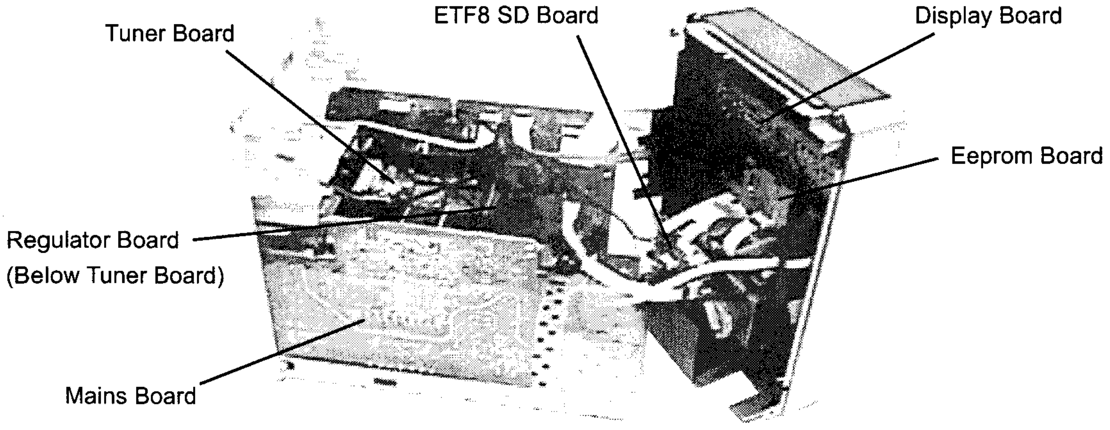
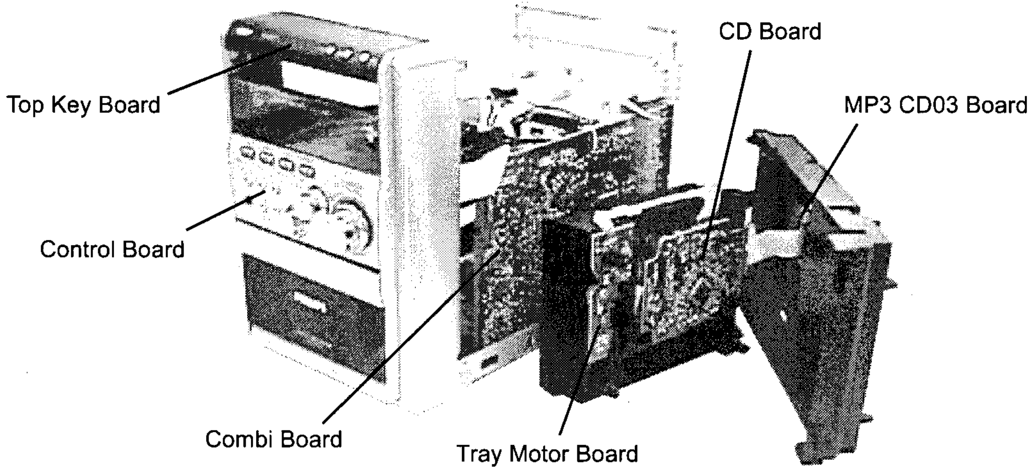
GB 3141 785 30062

Version 1.2

PHILIPS

LOCATION OF PC BOARDS


Tuner Board
ETF8 SD Board
Display Board
Eeprom Board
Regulator Board
(Below Tuner Board)
Mains Board


CD Board
MP3 CD03 Board
Top Key Board
Control Board
Combi Board
Tray Motor Board

VERSION VARIATIONS:

Type /Versions:	MCM5									
Features & Board in used:	/22	/25								
Aux in / CDR in	x	x								
Line Out										
Video Out										
Surround Out										
Subwoofer Out										
Digital Out										
Digital in										
Matrix Surround										
RDS/NEWS	x	x								
Dolby Pro Logic (DPL)										
Incredible Surround	x	x								
Karaoke Features										
Voltage Selector										
ECO Power Standby (Clock Display Off)	x	x								
ECO6 Tuner Board - Systems Non-Cenelec										
ECO6 Tuner Board - Systems Cenelec	x	x								

SPECIFICATIONS

GENERAL:

Mains voltage : 110-127V/220-240V Switchable for /21/21M
120V for /37
220V for /33
220-230V for /22/25
230-240V for /30
Mains frequency : 50/60Hz
Power consumption : 45W at 1/8 P_{rated}
< 15W at Standby (Demo mode off)
< 0.5W at ECO Standby
Clock accuracy : < 4 seconds per day
Dimension centre unit : 175 x 252 x 350mm

TUNER:

FM

Tuning range : 87.5-108MHz
Grid : 50kHz
100kHz for /37
IF frequency : 10.7MHz ± 25kHz
Aerial input : 75 ohm coaxial
300 ohm click fit for /37
Sensitivity at 26dB S/N : < 7uV
Selectivity at 600kHz bandwidth : > 25dB
Image rejection : > 25dB [> 75dB]
Distortion at RF=1mV, dev. 75kHz : < 3%
-3dB Limiting point : < 8uV
Crosstalk at RF=1mV, dev. 40kHz : > 18dB

MW

Tuning range : 531-1602kHz
530-1700kHz for /21/21M/37
Grid : 9kHz
10kHz for /21/21M/37
IF frequency : 450kHz ± 1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : < 4.4mV/M
Selectivity at 18kHz bandwidth : > 18dB
IF rejection : > 45dB
Image rejection : > 28dB
Distortion at RF=50mV, M=80% : < 5%

AMPLIFIER:

Output power (12 ohm, 1kHz, 10% THD)
L & R : 2 x 28W RMS

Output power (12 ohm, 60Hz-12.5kHz, 10% THD)
L & R : 2 x 25W FTC /37

Frequency response within -3dB : 50Hz-16kHz
Bass : 60Hz ± 3 Steps
Treble : 12kHz ± 3 Steps
Incredible Surround : On / Off

Input sensitivity
Aux in (at 1kHz) : 500mV at 600 ohm
CDR in (at 1kHz) : 1000mV at 600 ohm

Output sensitivity
Headphone output at 32 ohm : 15mW ± 2dB (Max. vol.)
CD Headphone output at 32 ohm : 5mW ± 2dB (Max. vol.)

CASSETTE RECORDER:

Number of track : 2 tracks (stereo)
Tape speed : 4.76 cm/sec ± 2%
Wow and flutter : < 0.4% DIN
Fast-wind/Rewind time C60 : 130 sec
Bias system : 78kHz ± 10kHz
Rec/Pb frequency response within 8dB : 80Hz - 10kHz
Signal to Noise Ratio (Type I) : > 48dBA
Signal to Noise Ratio (Type II) : > 52dBA

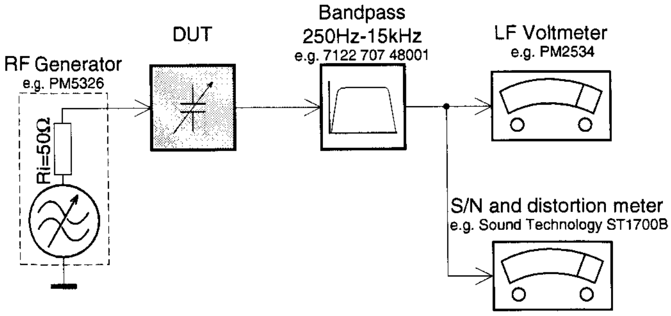
COMPACT DISC:

Measurement done directly at the connector on the board.
Output Resistance : < 100 ohm
Output Voltage (0dB, 1kHz) : 0.5Vrms ± 1dB (unloaded)
Channel Unbalance : < ±1dB
Channel Separation (1kHz) : > 60dB
Frequency Response (±3dB) : 20Hz-20kHz
Signal to Noise Ratio : > 76dBA
MP3-CD Bit Rate : 32-256 kbps
Sampling Frequencies : 32, 44.1, 48 kHz

[....] Values indicated are for "ECO6 Cenelec Board" only.

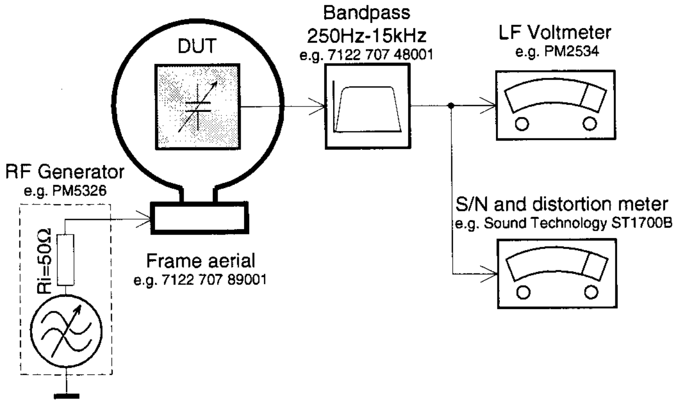
MEASUREMENT SETUP

Tuner FM


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

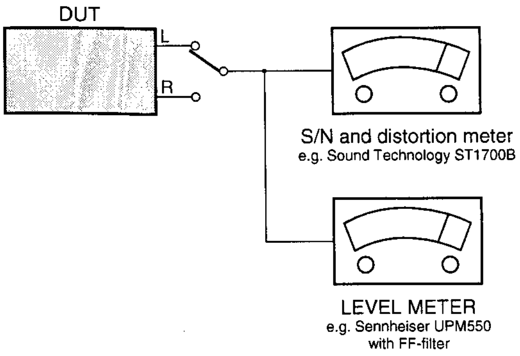
Tuner AM (MW,LW)


DUT
Bandpass
250Hz-15kHz
e.g. 7122 707 48001
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B
Frame aerial
e.g. 7122 707 89001

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

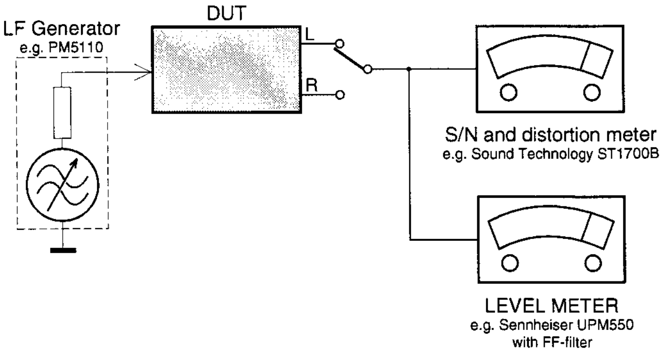
CD

Use Audio Signal Disc SBC429 4822 397 30184
(replaces test disc 3)


DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

Recorder

Use Universal Test Cassette **CrO2** SBC419 4822 397 30069
or Universal Test Cassette **Fe** SBC420 4822 397 30071


LF Generator
e.g. PM5110
DUT
L
R
S/N and distortion meter
e.g. Sound Technology ST1700B
LEVEL METER
e.g. Sennheiser UPM550
with FF-filter

SERVICE AIDS

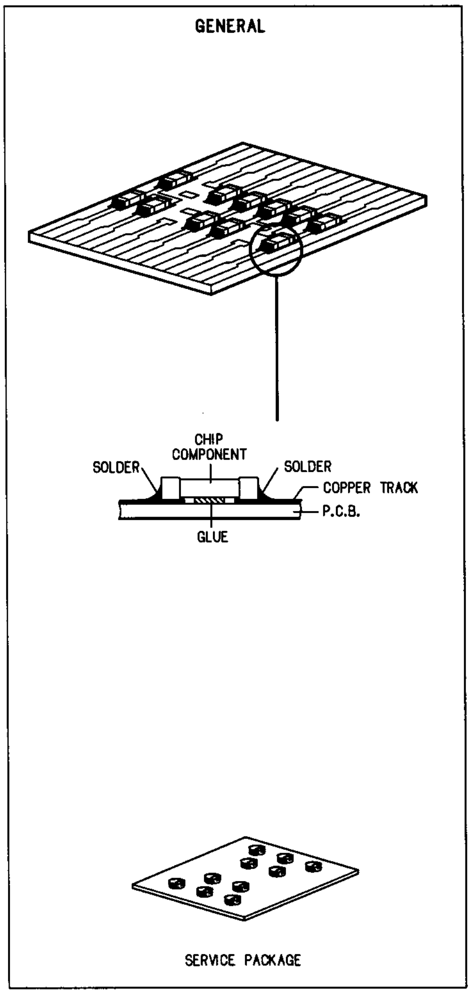
Service Tools:

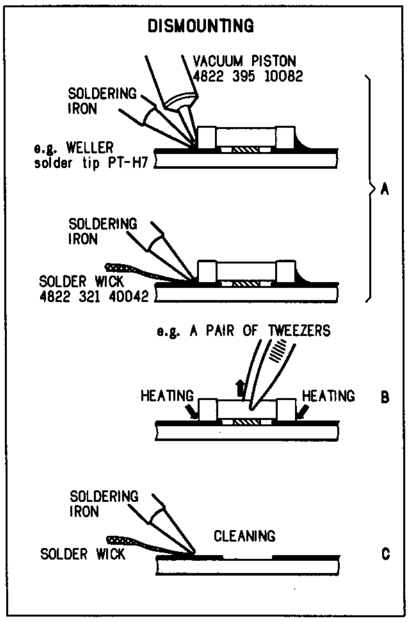
Universal Torx driver holder	4822 395 91019
Torx bit T10 150mm	4822 395 50456
Torx driver set T6 - T20	4822 395 50145
Torx driver T10 extended	4822 395 50423

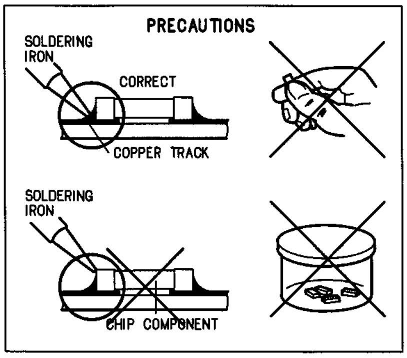
Compact Disc:

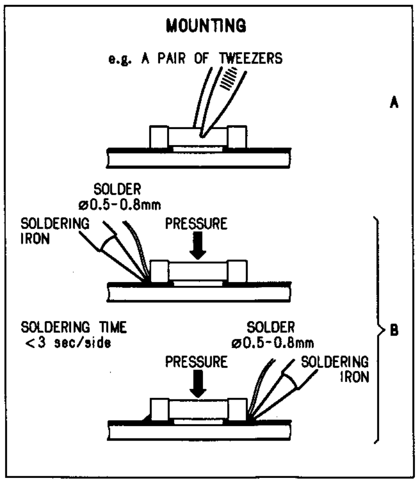
SBC426/426A Test disc 5 + 5A	4822 397 30096
SBC442 Audio Burn-in Test disc 1kHz	4822 397 30155
SBC429 Audio Signals disc	4822 397 30184
Dolby Pro-logic Test Disc	4822 395 10216

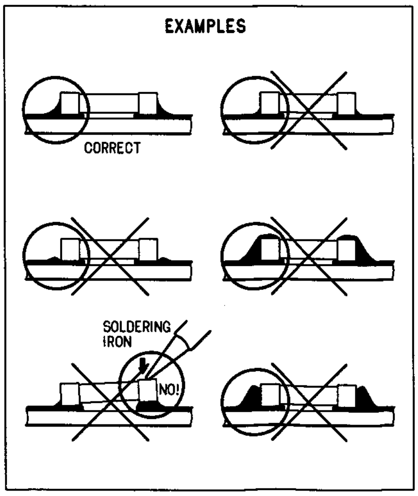
HANDLING CHIP COMPONENTS


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE


DISMOUNTING
VACUUM PISTON
4822 395 10082
SOLDERING IRON
e.g. WELLER solder tip PT-H7
A
SOLDERING IRON
SOLDER WICK
4822 321 40042
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
CLEANING
SOLDER WICK
C


PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT


MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
ø0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
<3 sec/side
SOLDER
ø0.5-0.8mm
PRESSURE
SOLDERING IRON
B


EXAMPLES
CORRECT
SOLDERING IRON
NO!

ESD

GB WARNING

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wrist wrap with resistance.
Keep components and tools also at this potential.

F ATTENTION

Tous les IC et beaucoup d'autres semi-conducteurs sont sensibles aux décharges statiques (ESD).
Leur longévité pourrait être considérablement écourtée par le fait qu'aucune précaution n'est prise à leur manipulation.
Lors de réparations, s'assurer de bien être relié au même potentiel que la masse de l'appareil et enfiler le bracelet serti d'une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l'on utilise soient également à ce potentiel.

D WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kan die Lebensdauer drastisch reduzieren.
Veranlassen Sie, dass Sie im Reparaturfall über ein Pulsarmband mit Widerstand verbunden sind mit dem gleichen Potential wie die Masse des Gerätes.
Bauteile und Hilfsmittel auch auf dieses gleiche Potential halten.

NL WAARSCHUWING

Alle IC's en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen.
Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

I AVVERTIMENTO

Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione.
Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa dell'apparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

GB ESD PROTECTION EQUIPMENT:

Complete Kit ESD3 (small tablemat, wristband, connection box, extention cable and earth cable)	4822 310 10671
Wristband tester	4822 344 13999

GB

Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified, be used

Safety components are marked by the symbol ⚠.

NL

Veiligheidsbepalingen vereisen, dat het apparaat bij reparatie in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.

De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

F

Les normes de sécurité exigent que l'appareil soit remis à l'état d'origine et que soient utiliséés les piéces de rechange identiques à celles spécifiées.

Less composants de sécurité sont marqués ⚠

D

Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Original zustand des Geräts darf nicht verändert werden; für Reparaturen sind Original-Ersatzteile zu verwenden.

Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

I

Le norme di sicurezza esigono che l'apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati.

Componenty di sicurezza sono marcati con ⚠

GB

After servicing and before returning set to customer perform a leakage current measurement test from all exposed metal parts to earth ground to assure no shock hazard exist. The leakage current must not exceed 0.5mA.

CLASS 1
LASER PRODUCT

GB Warning !

Invisible laser radiation when open.
Avoid direct exposure to beam.

S Varning !

Osynlig laserstrålning när apparaten är öppnad och spärren är urkopplad. Betrakta ej strålen.

SF Varoitus !

Avatussa laitteessa ja suojalukituksen ohitettaessa olet alttiina näkymättömälle laserisäteilylle. Älä katso säteeseen!

DK Advarse !

Usynlig laserstråling ved åbning når sikkerhedsafbrydere er ude af funktion. Undgå udsaettelse for stråling.

F

"Pour votre sécurité, ces documents doivent être utilisés par des spécialistes agréés, seuls habilités à réparer votre appareil en panne".

DISMANTLING INSTRUCTIONS

Dismantling of the Cover Cassette and Universal Loader

1) Remove the Cover Cassette (pos 150) in the direction as shown in Figure 1.
2) Loosen 4 screws to remove the Cover Top (pos 240) by sliding it out towards the rear before lifting up.
   - 2 screws on the rear
   - 1 screw each on the left & right side
3) Loosen 2 screws each to remove the Panel Left (pos 180) and Panel Right (pos 181). The Panels are removed by sliding it towards the rear and outwards.
   - 1 screw on the rear
   - 1 screw on the side
   - see Service position A
4) Use a screw driver to give a push in the direction as shown in Figure 2 and Figure 2A to unlock the Loader Tray before sliding it out.
5) Slide out the Loader Tray and remove the Cover CD (pos 110 + pos 111) in the direction as shown in Figure 3.
6) Loosen 4 screws A (see Figure 4) to remove the Bracket Module Mounting (pos 156) and Universal Loader (pos 1103).
   - 2 screws each on the left & right side

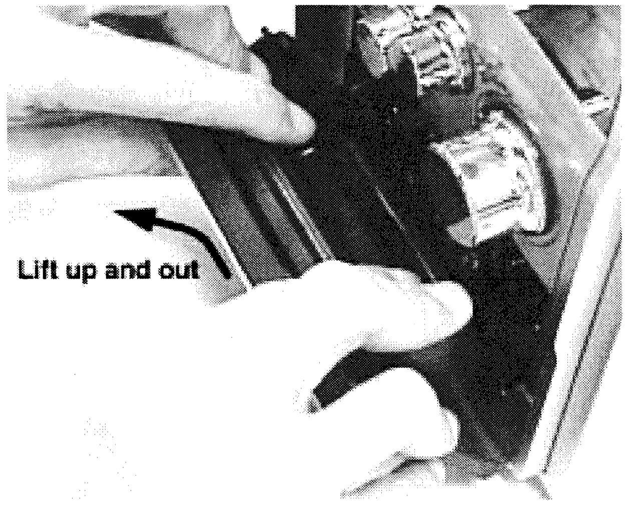


Figure 1

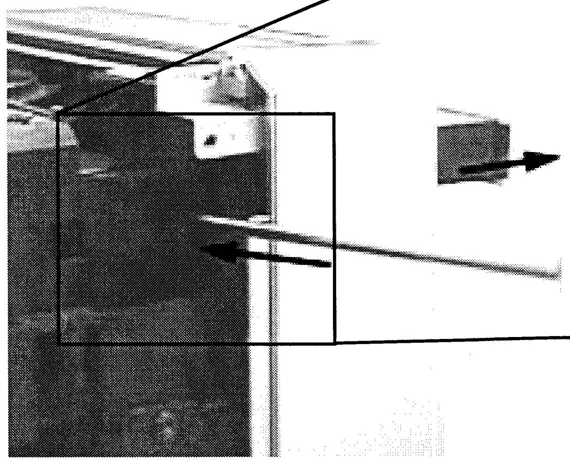


Figure 2

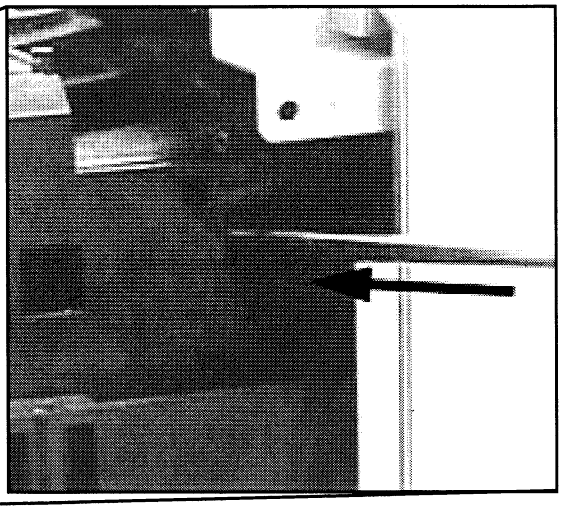


Figure 2A

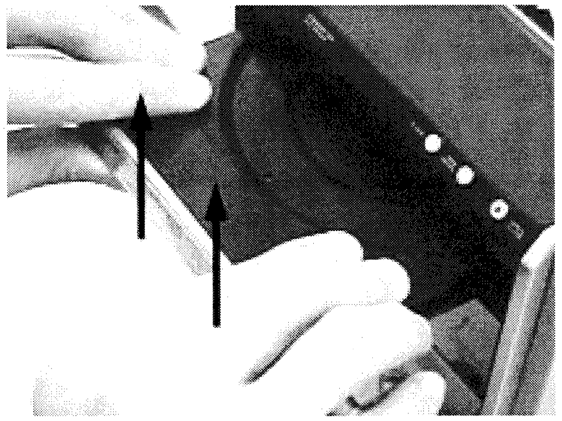


Figure 3

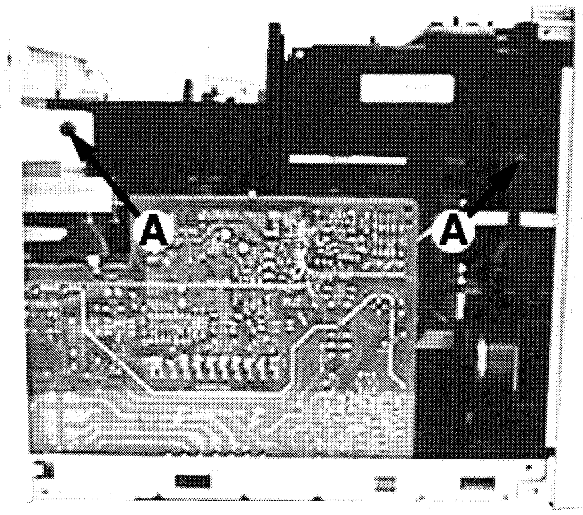


Figure 4

Detaching the Universal Loader from the Bracket Module Mounting

1) Slide out the Loader Tray fully and remove 4 screws B (see Figure 5) to detach the Universal Loader (pos 1103) from the Bracket Module Mounting (pos 156).
   - see Service position B

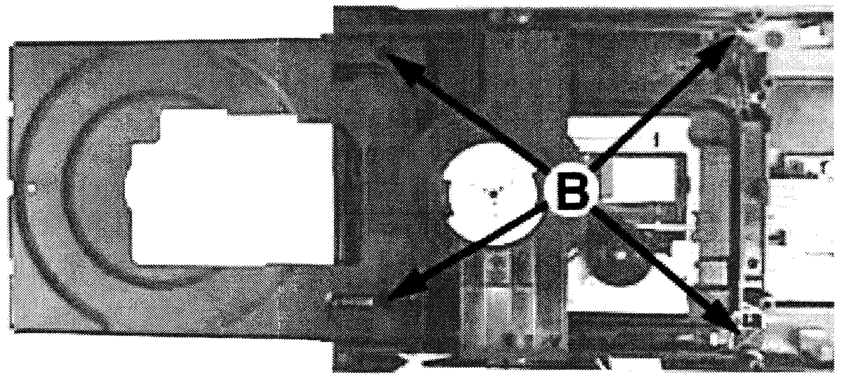


Figure 5

Detaching the Front Panel assembly from the Bottom/Rear assembly

1) Remove 2 screws C (see Figure 6) from the bottom of the Cabinet Front (pos 101).
2) Release the fixation of the Combi Board (pos1102-1003) to Bracket Combi (pos 155) by releasing the 2 catches C1 (see Figure 7) and pulling the Combi Board outwards as shown in Figure 7A.
3) Uncatch 2 catches C2 (see Figure 7) on the left & right sides of the Cabinet Front (pos 101) and slides the Front Panel assembly out towards the front.
   - see Service position C

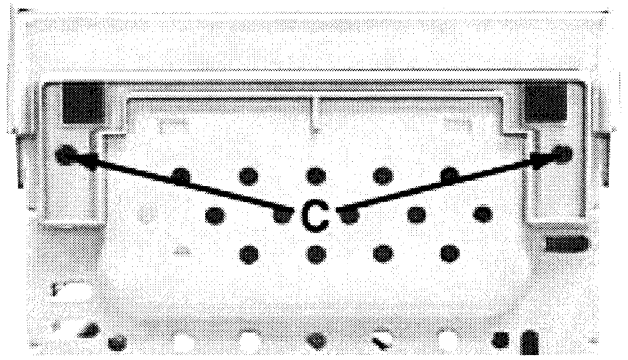
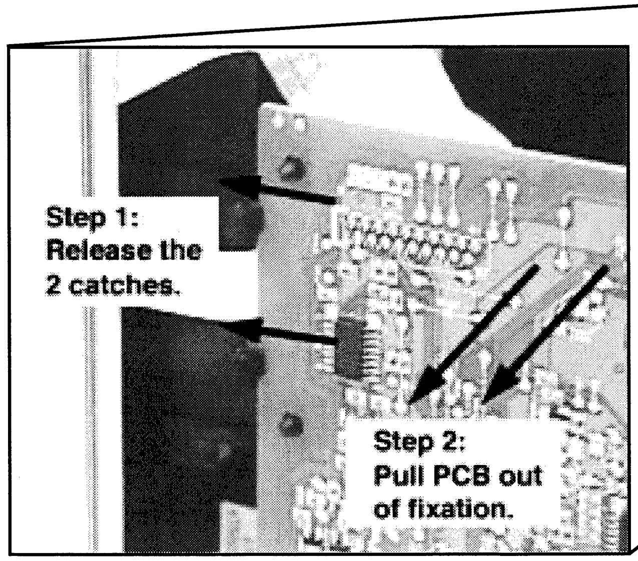


Figure 6



Step 1: Release the 2 catches.

Step 2: Pull PCB out of fixation.

Figure 7A

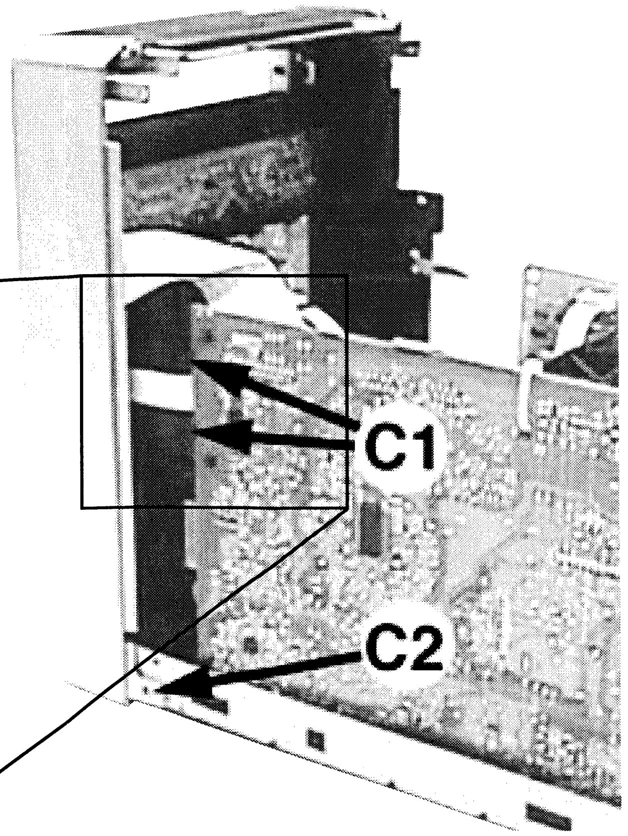


Figure 7

DISMANTLING INSTRUCTIONS

Dismantling of the Front Panel assembly

1) The Knob Volume (pos 141) can be remove by pulling it out in the direction as shown in Figure 8.
2) The Knob Bass/Knob Treble (pos 140) can be remove by pulling it out in the direction as shown in Figure 9.
3) Loosen 4 screws D (see Figure 12) to remove the Shield Tape Deck and Module Tape Deck (pos 1107).
4) Loosen 2 screws E (see Figure 11) to remove the Bracket Top Support (pos 113).
5) Loosen 1 screw F and 4 catches C3 (see Figure 11) to remove the Eeprom Board (pos 1105D).
6) Loosen 4 screws G (see Figure 11) to remove the Bracket Combi (pos 155).
7) Uncatch 4 catches C4 (see Figure 13) to remove the Display Board (pos 1105A)
8) Loosen 4 screws H (see Figure 13) to remove the Top Key Board (pos 1105C).
9) Loosen 5 screws J (see Figure 14) and 2 nuts W (see Figure 10) to remove the Control Board (pos 1105B).

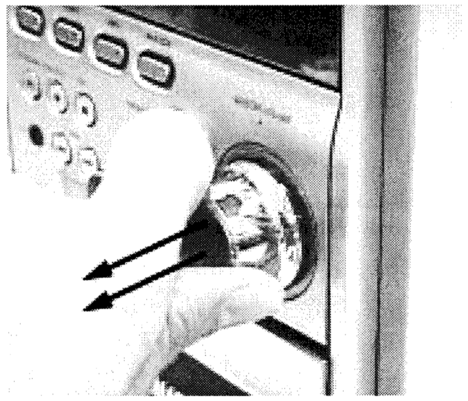


Figure 8

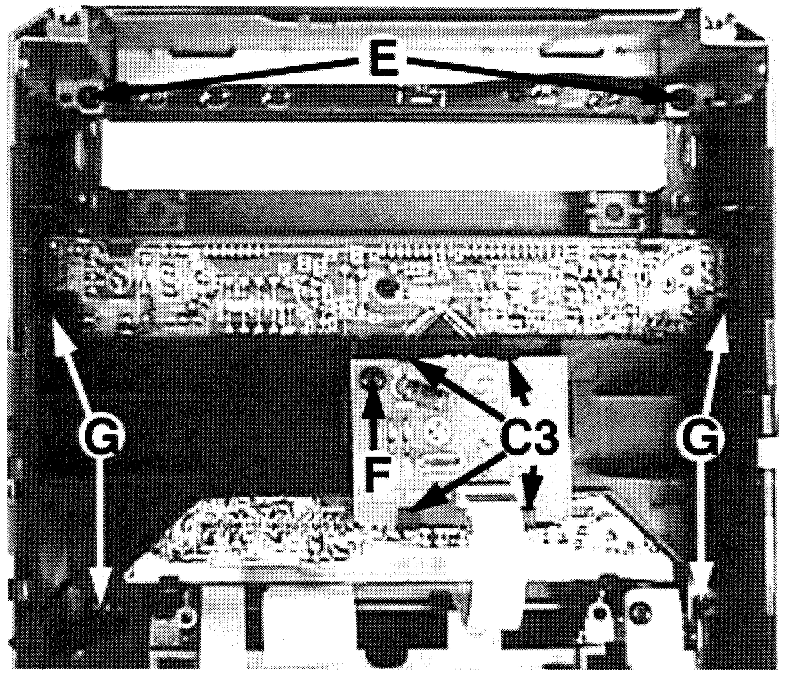


Figure 11

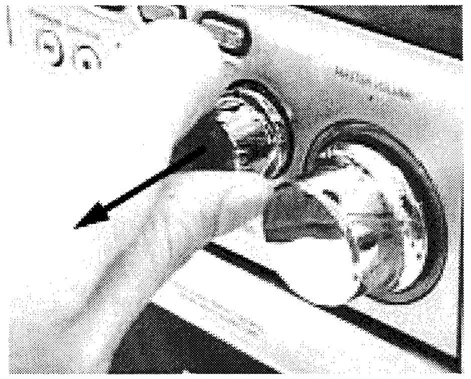


Figure 9

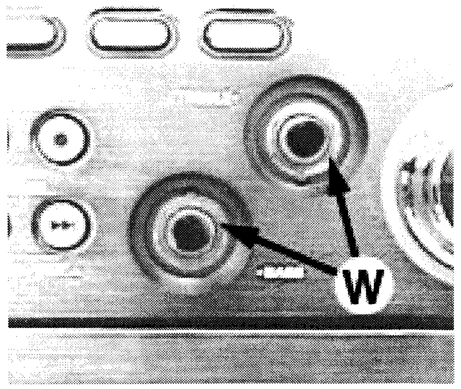


Figure 10

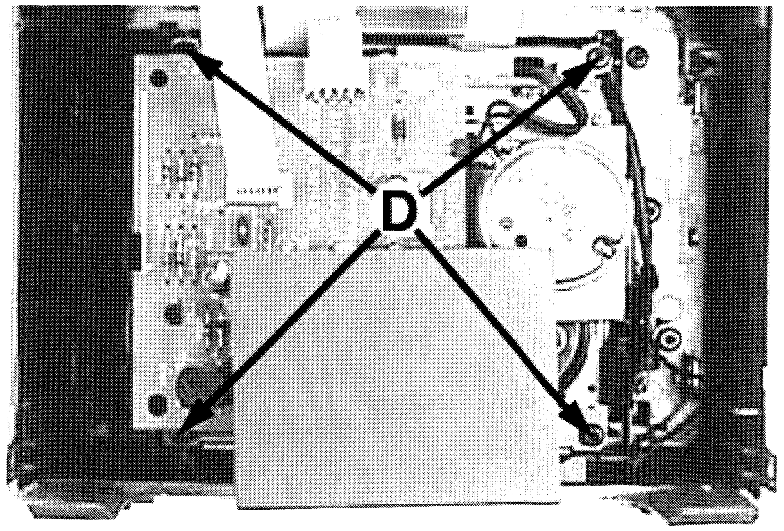


Figure 12

Dismantling of the Front Panel assembly

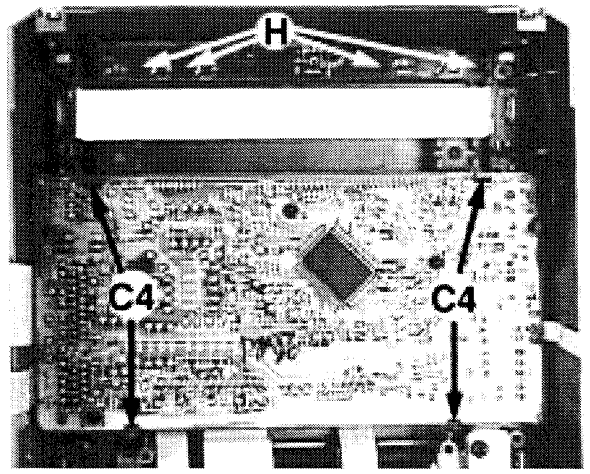


Figure 13

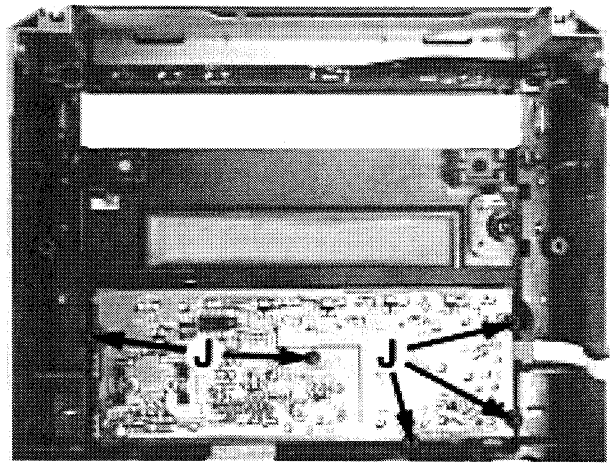


Figure 14

Dismantling of the Rear Panel assembly

1) Loosen 3 screws K and 2 catches C5 (see Figure 15) to remove the Tuner Board assembly.
2) Loosen 3 screws L (see Figure 15) to free the Combi Board (pos 1102-1003).
3) Loosen 1 screw M (see Figure 15) to free the Mains Socket Board (pos 1102-1001B).
4) Loosen 1 scew N and 2 catches C6 (see Figure 15) to free the Panel Rear (pos 230) by sliding it out towards the rear.

Note : *Tuner Board assembly and Mains Socket Board can also be remove together with the Panel Rear.*

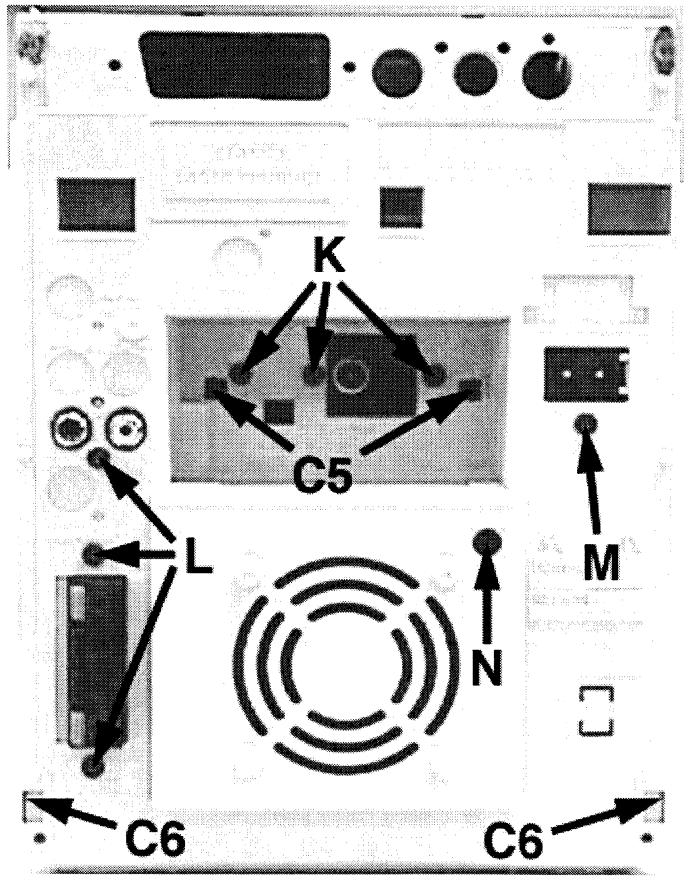


Figure 15

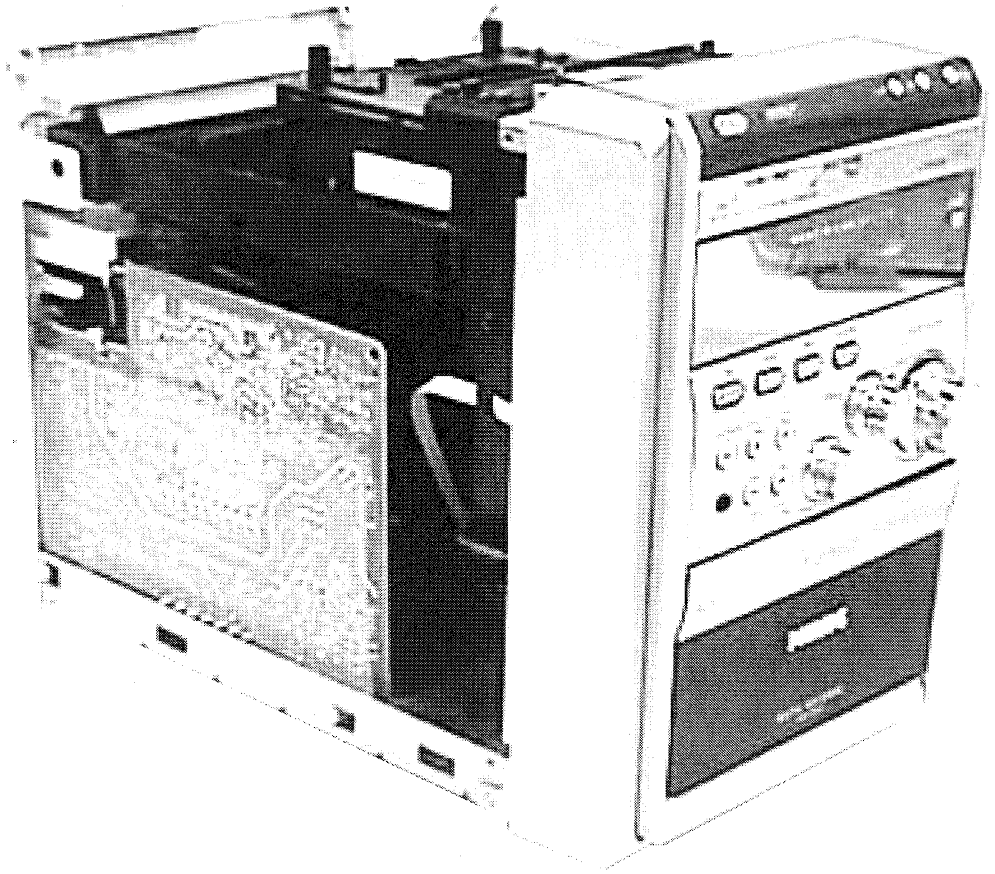
DISMANTLING INSTRUCTIONS

Repair Hints & Service Positions

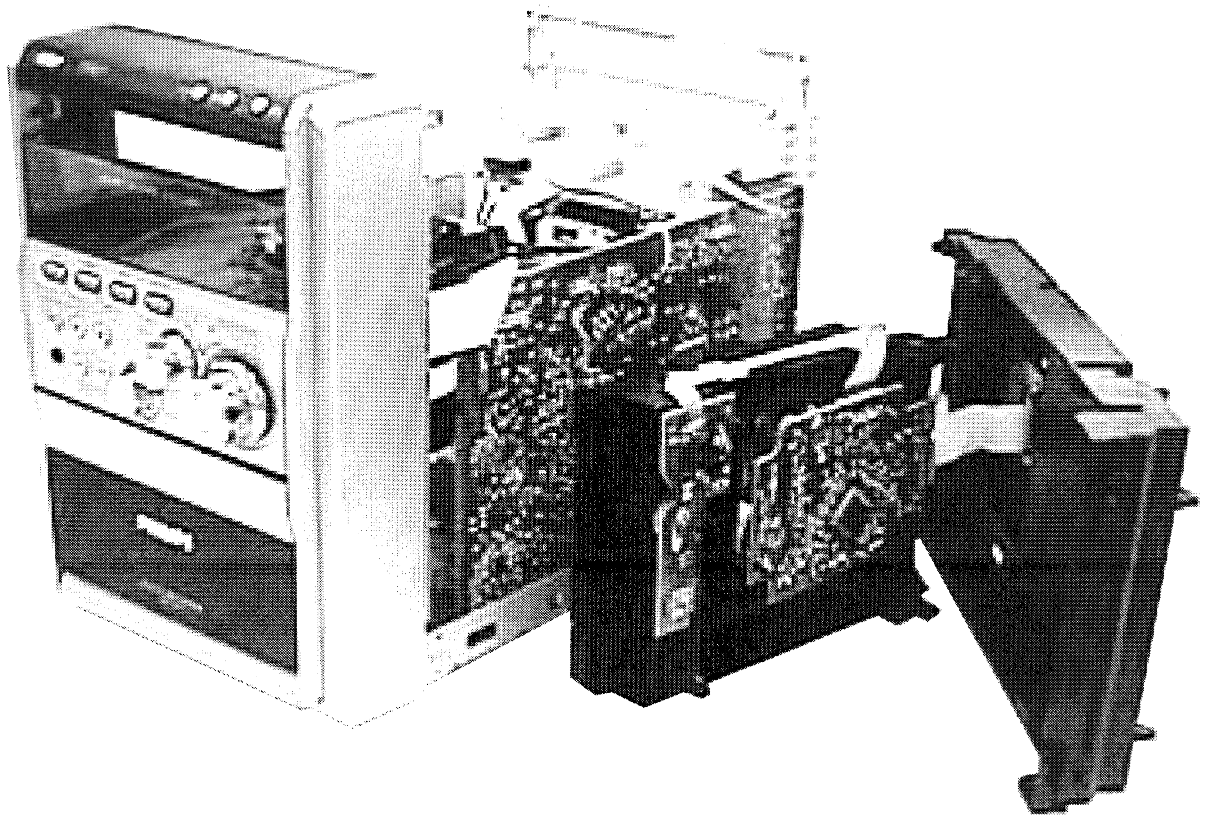
1) During repair it is possible to disconnect the Tuner Board and/or CD Module completely unless the fault is suspected to be in that area. This will not affect the performance of the rest of the set.

Note: The flex cables are very fragile, care should be taken not to damage them during repair. After repair, be very sure that the flex cables are inserted properly into the flex sockets before encasing, otherwise faults may occurs.

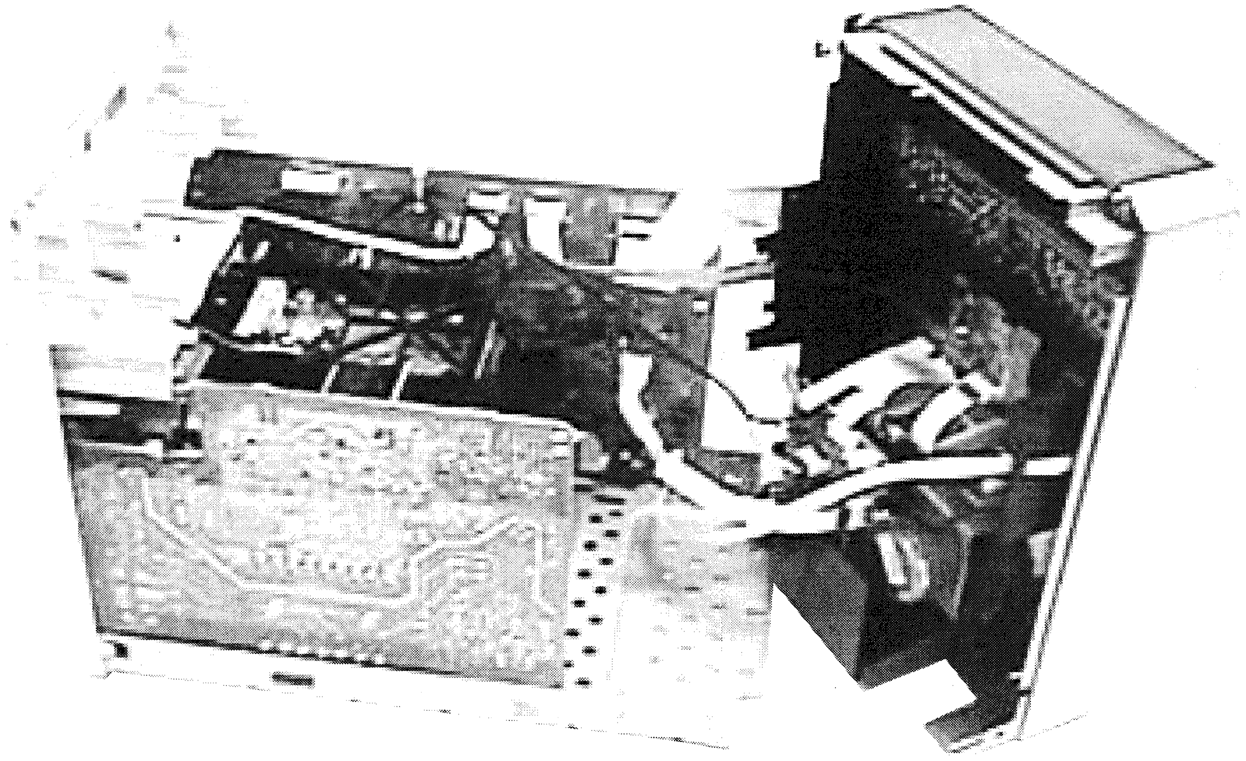
Service position A



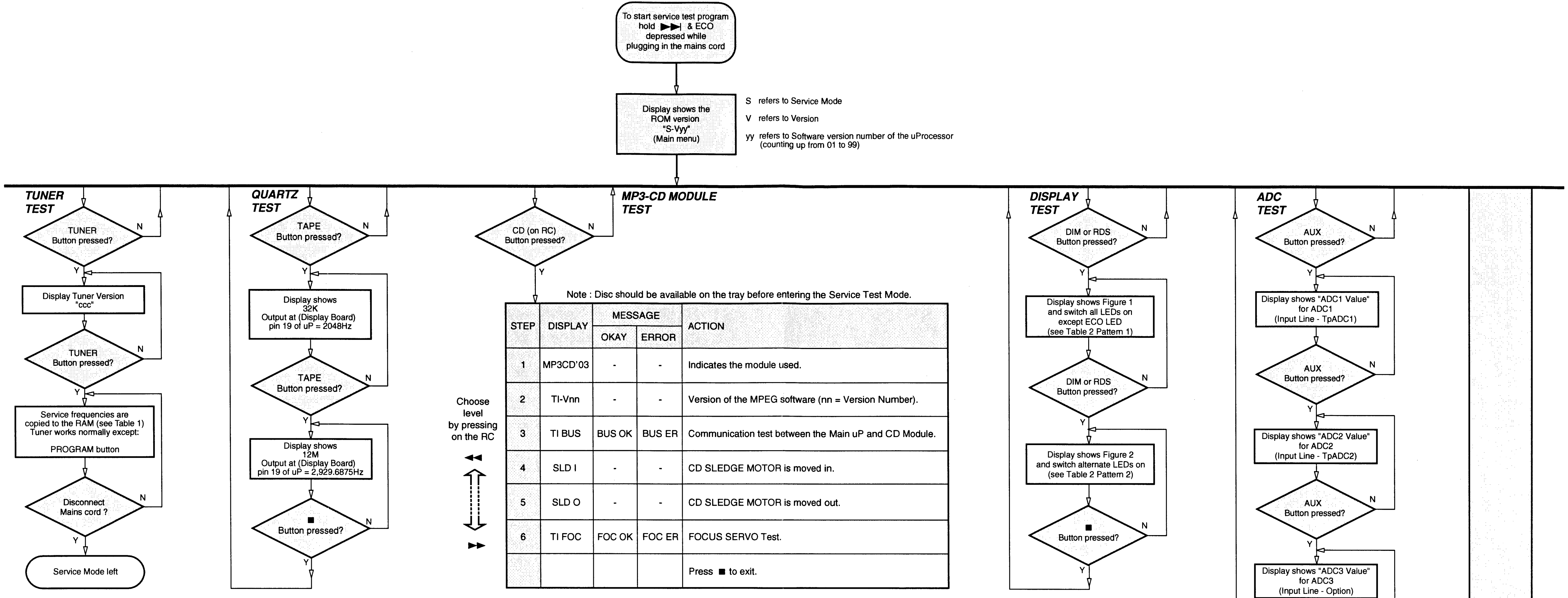
Service position B



Service position C



SERVICE TEST PROGRAM


To start service test program hold ▶▶| & ECO depressed while plugging in the mains cord
Display shows the ROM version "S-Vyy" (Main menu)
TUNER TEST
TUNER Button pressed?
N
Y
Display Tuner Version "ccc"
TUNER Button pressed?
N
Y
Service frequencies are copied to the RAM (see Table 1) Tuner works normally except: PROGRAM button
Disconnect Mains cord ?
N
Y
Service Mode left
QUARTZ TEST
TAPE Button pressed?
N
Y
Display shows 32K Output at (Display Board) pin 19 of uP = 2048Hz
TAPE Button pressed?
N
Y
Display shows 12M Output at (Display Board) pin 19 of uP = 2,929.6875Hz
■ Button pressed?
N
Y
MP3-CD MODULE TEST
CD (on RC) Button pressed?
N
Y
Choose level by pressing on the RC
◀◀
▶▶
DISPLAY TEST
DIM or RDS Button pressed?
N
Y
Display shows Figure 1 and switch all LEDs on except ECO LED (see Table 2 Pattern 1)
DIM or RDS Button pressed?
N
Y
Display shows Figure 2 and switch alternate LEDs on (see Table 2 Pattern 2)
■ Button pressed?
N
Y
ADC TEST
AUX Button pressed?
N
Y
Display shows "ADC1 Value" for ADC1 (Input Line - TpADC1)
AUX Button pressed?
N
Y
Display shows "ADC2 Value" for ADC2 (Input Line - TpADC2)
AUX Button pressed?
N
Y
Display shows "ADC3 Value" for ADC3 (Input Line - Option)

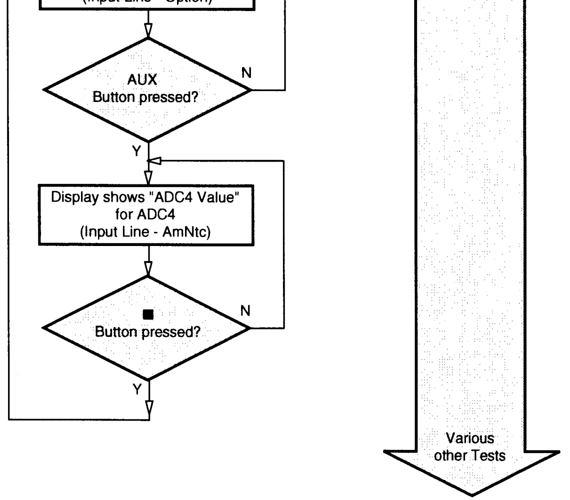
S refers to Service Mode

V refers to Version

yy refers to Software version number of the uProcessor (counting up from 01 to 99)

Note : Disc should be available on the tray before entering the Service Test Mode.

STEP	DISPLAY	MESSAGE		ACTION
		OKAY	ERROR	
1	MP3CD'03	-	-	Indicates the module used.
2	TI-Vnn	-	-	Version of the MPEG software (nn = Version Number).
3	TI BUS	BUS OK	BUS ER	Communication test between the Main uP and CD Module.
4	SLD I	-	-	CD SLEDGE MOTOR is moved in.
5	SLD O	-	-	CD SLEDGE MOTOR is moved out.
6	TI FOC	FOC OK	FOC ER	FOCUS SERVO Test.
				Press ■ to exit.


AUX Button pressed?
N
Y
Display shows "ADC4 Value" for ADC4 (Input Line - AmNtc)
■ Button pressed?
N
Y
Various other Tests

ADC Test is used for checking the ADC inputs to the microprocessor.

The display shows an ADC value between 0 and 255 for an input signal between 0 and 5V.

PRESET	Europe "EUR"	East Europe "EAS"	East Eur. Extended-band "EAS"	USA "USA"	Oversea "OSE"
1	87.5MHz	87.5MHz	65.81MHz	87.5MHz	87.5MHz
2	108MHz	108MHz	108MHz	108MHz	108MHz
3	531kHz	531kHz	74MHz	530kHz	531/530kHz*
4	1602kHz	1602kHz	87.5MHz	1700kHz	1602/1700kHz*
5	558kHz	558kHz	531kHz	560kHz	558/560kHz*
6	1494kHz	1494kHz	1602kHz	1500kHz	1494/1500kHz*
7	87.5MHz	87.5MHz	558kHz	98MHz	87.5/98MHz*
8	87.5MHz	87.5MHz	1494kHz	87.5MHz	87.5MHz
9	87.5MHz	87.5MHz	98MHz	87.5MHz	87.5MHz
10	87.5MHz	87.5MHz	70.01MHz	87.5MHz	87.5MHz
11	98MHz	98MHz	65.81MHz	87.5MHz	98/87.5MHz*

Table 1

Note: * Depending on the selected grid frequency (9 or 10kHz).
By holding the ECO and TUNER buttons depressed while switching on the Mains supply, one of the undermentioned features will be activated:
- the tuning grid frequency is toggled between 9kHz and 10kHz for the Oversea (/21) version.
- the extended FM1 (65.81MHz - 74MHz) is toggled on and off for East Eur. (/34) version.

LEDs	Pattern 1	Pattern 2
ECO	Off	Off
CD	On	On
TUNER	On	Off
TAPE	On	On
AUX	On	Off
Volume Rotary	On	On

Table 2

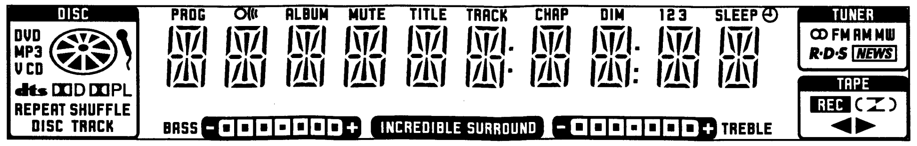

DISC
DVD
MP3
V CD
dts
REPEAT SHUFFLE
DISC TRACK
PROG
ALBUM
MUTE
TITLE
TRACK
CHAP
DIM
1 2 3
SLEEP
BASS
INCREDIBLE SURROUND
TREBLE
TUNER
FM AM MW
R·D·S NEWS
TAPE
REC

Figure 1

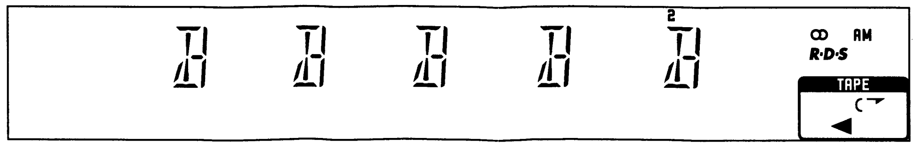
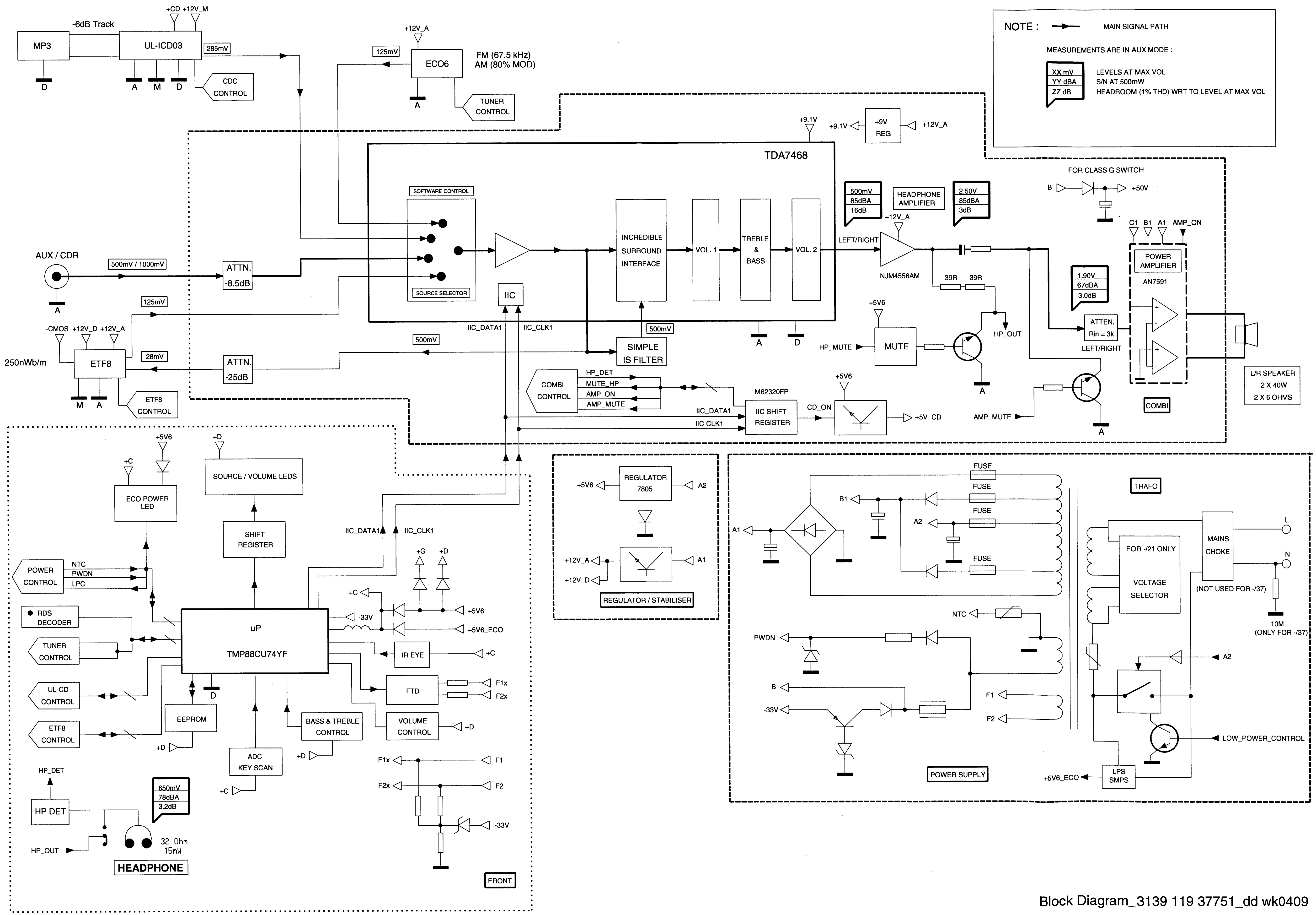

2
AM
R·D·S
TAPE

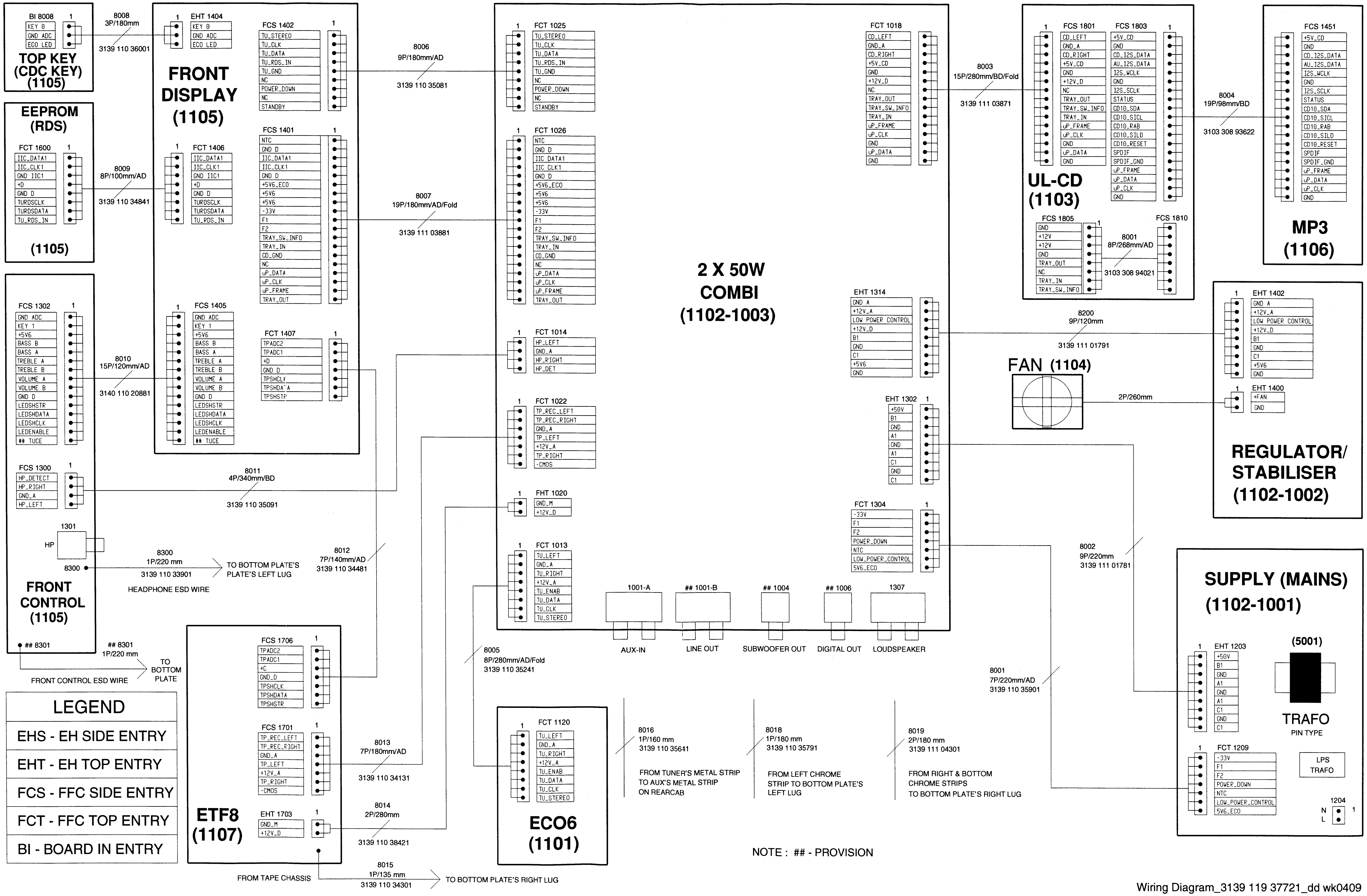
Figure 2

TEST	Activated with	ACTION
EEPROM TEST	▶▶| ■ to Exit	Test patterns will be sent to the EEPROM. "PASS" is displayed if the uProcessor read back the test patterns correctly, otherwise "FAIL" will be displayed.
EEPROM FORMAT TEST	|◀◀	Load default data. Display shows "NEW" for 1 second. ***Caution! All presets from the customer will be lost!!***
DEMO TOGGLE	▶II	Pressing this button will toggle between DEMO ON and DEMO OFF. The DEMO status will scroll once across the Display.
ROTARY ENCODER TEST	Volume, Treble or Bass Knob	Display shows value for 2 seconds. Values increases or decreases until Volume Maximum (0dB) or Volume Minimum (VOL MUTE) is reached.
LEAVE SERVICE TEST PROGRAM	Disconnect mains cord	

SET BLOCK DIAGRAM


NOTE :
MAIN SIGNAL PATH
MEASUREMENTS ARE IN AUX MODE :
XX mV
YY dBA
ZZ dB
LEVELS AT MAX VOL
S/N AT 500mW
HEADROOM (1% THD) WRT TO LEVEL AT MAX VOL
MP3
-6dB Track
UL-ICD03
+CD
+12V_M
285mV
D
A
M
D
CDC CONTROL
+12V_A
125mV
ECO6
FM (67.5 kHz)
AM (80% MOD)
A
TUNER CONTROL
+9.1V
+9.1V
+9V REG
+12V_A
TDA7468
SOFTWARE CONTROL
SOURCE SELECTOR
INCREDIBLE SURROUND INTERFACE
VOL. 1
TREBLE & BASS
VOL. 2
IIC
A
D
500mV
85dBA
16dB
HEADPHONE AMPLIFIER
2.50V
85dBA
3dB
+12V_A
LEFT/RIGHT
NJM4556AM
39R
39R
HP_OUT
FOR CLASS G SWITCH
B
+50V
C1
B1
A1
AMP_ON
POWER AMPLIFIER
AN7591
1.90V
67dBA
3.0dB
ATTEN.
Rin = 3k
LEFT/RIGHT
L/R SPEAKER
2 X 40W
2 X 6 OHMS
COMBI
AUX / CDR
500mV / 1000mV
A
ATTN.
-8.5dB
125mV
-CMOS
+12V_D
+12V_A
250nWb/m
ETF8
28mV
ATTN.
-25dB
500mV
M
A
ETF8 CONTROL
IIC_DATA1
IIC_CLK1
500mV
SIMPLE IS FILTER
+5V6
HP_MUTE
MUTE
A
COMBI CONTROL
HP_DET
MUTE_HP
AMP_ON
AMP_MUTE
M62320FP
+5V6
IIC_DATA1
IIC CLK1
IIC SHIFT REGISTER
CD_ON
+5V_CD
AMP_MUTE
A
+5V6
+D
+C
ECO POWER LED
SOURCE / VOLUME LEDS
SHIFT REGISTER
IIC_DATA1
IIC_CLK1
POWER CONTROL
NTC
PWDN
LPC
RDS DECODER
TUNER CONTROL
uP
TMP88CU74YF
+G
+D
+C
-33V
+5V6
+5V6_ECO
IR EYE
+C
FTD
F1x
F2x
UL-CD CONTROL
ETF8 CONTROL
D
EEPROM
+D
ADC KEY SCAN
+C
BASS & TREBLE CONTROL
+D
VOLUME CONTROL
+D
F1x
F1
F2x
F2
-33V
HP_DET
HP DET
650mV
78dBA
3.2dB
HP_OUT
32 Ohm
15mW
HEADPHONE
FRONT
REGULATOR 7805
+5V6
A2
+12V_A
+12V_D
A1
REGULATOR / STABILISER
FUSE
FUSE
FUSE
FUSE
B1
A2
A1
TRAFO
FOR -/21 ONLY
VOLTAGE SELECTOR
MAINS CHOKE
L
N
(NOT USED FOR -/37)
10M
(ONLY FOR -/37)
NTC
PWDN
B
-33V
F1
F2
A2
LOW_POWER_CONTROL
+5V6_ECO
LPS SMPS
POWER SUPPLY

SET WIRING DIAGRAM


BI 8008
KEY B
GND ADC
ECO LED
TOP KEY
(CDC KEY)
(1105)
8008
3P/180mm
3139 110 36001
EHT 1404
KEY B
GND ADC
ECO LED
FRONT
DISPLAY
(1105)
FCS 1402
TU_STEREO
TU_CLK
TU_DATA
TU_RDS_IN
TU_GND
NC
POWER_DOWN
NC
STANDBY
8006
9P/180mm/AD
3139 110 35081
EEPROM
(RDS)
FCT 1600
IIC_DATA1
IIC_CLK1
GND IIC1
+D
GND D
TURDSCLK
TURDSDATA
TU_RDS_IN
8009
8P/100mm/AD
3139 110 34841
FCT 1406
(1105)
FCS 1401
NTC
GND D
IIC_DATA1
IIC_CLK1
GND D
+5V6_ECO
+5V6
+5V6
-33V
F1
F2
TRAY_SW_INFO
TRAY_IN
CD_GND
NC
uP_DATA
uP_CLK
uP_FRAME
TRAY_OUT
8007
19P/180mm/AD/Fold
3139 111 03881
FCS 1302
GND ADC
KEY 1
+5V6
BASS B
BASS A
TREBLE A
TREBLE B
VOLUME A
VOLUME B
GND D
LEDSHSTR
LEDSHDATA
LEDSHCLK
LEDENABLE
## TUCE
8010
15P/120mm/AD
3140 110 20881
FCS 1405
FCT 1407
TPADC2
TPADC1
+D
GND D
TPSHCLK
TPSHDATA
TPSHSTP
FCS 1300
HP_DETECT
HP_RIGHT
GND_A
HP_LEFT
8011
4P/340mm/BD
3139 110 35091
1301
HP
8300
8300
1P/220 mm
3139 110 33901
HEADPHONE ESD WIRE
TO BOTTOM PLATE'S
PLATE'S LEFT LUG
8012
7P/140mm/AD
3139 110 34481
FRONT
CONTROL
(1105)
## 8301
## 8301
1P/220 mm
TO
BOTTOM
PLATE
FRONT CONTROL ESD WIRE
LEGEND
EHS - EH SIDE ENTRY
EHT - EH TOP ENTRY
FCS - FFC SIDE ENTRY
FCT - FFC TOP ENTRY
BI - BOARD IN ENTRY
FCS 1706
TPADC2
TPADC1
+C
GND_D
TPSHCLK
TPSHDATA
TPSHSTR
FCS 1701
TP_REC_LEFT
TP_REC_RIGHT
GND_A
TP_LEFT
+12V_A
TP_RIGHT
-CMOS
8013
7P/180mm/AD
3139 110 34131
EHT 1703
GND_M
+12V_D
8014
2P/280mm
3139 110 38421
ETF8
(1107)
8015
1P/135 mm
3139 110 34301
FROM TAPE CHASSIS
TO BOTTOM PLATE'S RIGHT LUG
FCT 1025
TU_STEREO
TU_CLK
TU_DATA
TU_RDS_IN
TU_GND
NC
POWER_DOWN
NC
STANDBY
FCT 1026
NTC
GND D
IIC DATA1
IIC CLK1
GND D
+5V6_ECO
+5V6
+5V6
-33V
F1
F2
TRAY_SW_INFO
TRAY_IN
CD_GND
NC
uP_DATA
uP_CLK
uP_FRAME
TRAY_OUT
FCT 1014
HP_LEFT
GND_A
HP_RIGHT
HP_DET
FCT 1022
TP_REC_LEFT
TP_REC_RIGHT
GND_A
TP_LEFT
+12V_A
TP_RIGHT
-CMOS
FHT 1020
GND_M
+12V_D
FCT 1013
TU_LEFT
GND_A
TU_RIGHT
+12V_A
TU_ENAB
TU_DATA
TU_CLK
TU_STEREO
2 X 50W
COMBI
(1102-1003)
1001-A
## 1001-B
## 1004
## 1006
1307
AUX-IN
LINE OUT
SUBWOOFER OUT
DIGITAL OUT
LOUDSPEAKER
8005
8P/280mm/AD/Fold
3139 110 35241
FCT 1120
TU_LEFT
GND_A
TU_RIGHT
+12V_A
TU_ENAB
TU_DATA
TU_CLK
TU_STEREO
ECO6
(1101)
8016
1P/160 mm
3139 110 35641
FROM TUNER'S METAL STRIP
TO AUX'S METAL STRIP
ON REARCAB
8018
1P/180 mm
3139 110 35791
FROM LEFT CHROME
STRIP TO BOTTOM PLATE'S
LEFT LUG
8019
2P/180 mm
3139 111 04301
FROM RIGHT & BOTTOM
CHROME STRIPS
TO BOTTOM PLATE'S RIGHT LUG
NOTE : ## - PROVISION
FCT 1018
CD_LEFT
GND_A
CD_RIGHT
+5V_CD
GND
+12V_D
NC
TRAY_OUT
TRAY_SW_INFO
TRAY_IN
uP_FRAME
uP_CLK
GND
uP_DATA
GND
8003
15P/280mm/BD/Fold
3139 111 03871
EHT 1314
GND A
+12V_A
LOW POWER CONTROL
+12V_D
B1
GND
C1
+5V6
GND
EHT 1302
+50V
B1
GND
A1
GND
A1
C1
GND
C1
FCT 1304
-33V
F1
F2
POWER_DOWN
NTC
LOW_POWER_CONTROL
5V6_ECO
FCS 1801
CD_LEFT
GND_A
CD_RIGHT
+5V_CD
GND
+12V_D
NC
TRAY_OUT
TRAY_SW_INFO
TRAY_IN
uP_FRAME
uP_CLK
GND
uP_DATA
GND
FCS 1803
+5V_CD
GND
CD_I2S_DATA
AU_I2S_DATA
I2S_WCLK
GND
I2S_SCLK
STATUS
CD10_SDA
CD10_SICL
CD10_RAB
CD10_SILD
CD10_RESET
SPDIF
SPDIF_GND
uP_FRAME
uP_DATA
uP_CLK
GND
UL-CD
(1103)
FCS 1805
GND
+12V
+12V
GND
TRAY_OUT
NC
TRAY_IN
TRAY_SW_INFO
FCS 1810
8001
8P/268mm/AD
3103 308 94021
8004
19P/98mm/BD
3103 308 93622
FCS 1451
+5V_CD
GND
CD_I2S_DATA
AU_I2S_DATA
I2S_WCLK
GND
I2S_SCLK
STATUS
CD10_SDA
CD10_SICL
CD10_RAB
CD10_SILD
CD10_RESET
SPDIF
SPDIF_GND
uP_FRAME
uP_DATA
uP_CLK
GND
MP3
(1106)
8200
9P/120mm
3139 111 01791
EHT 1402
GND A
+12V_A
LOW POWER CONTROL
+12V_D
B1
GND
C1
+5V6
GND
FAN (1104)
2P/260mm
EHT 1400
+FAN
GND
REGULATOR/
STABILISER
(1102-1002)
8002
9P/220mm
3139 111 01781
SUPPLY (MAINS)
(1102-1001)
EHT 1203
+50V
B1
GND
A1
GND
A1
C1
GND
C1
(5001)
TRAFO
PIN TYPE
8001
7P/220mm/AD
3139 110 35901
FCT 1209
-33V
F1
F2
POWER_DOWN
NTC
LOW_POWER_CONTROL
5V6_ECO
LPS
TRAFO
1204
N
L
1

Wiring Diagram_3139 119 37721_dd wk0409

FRONT BOARD

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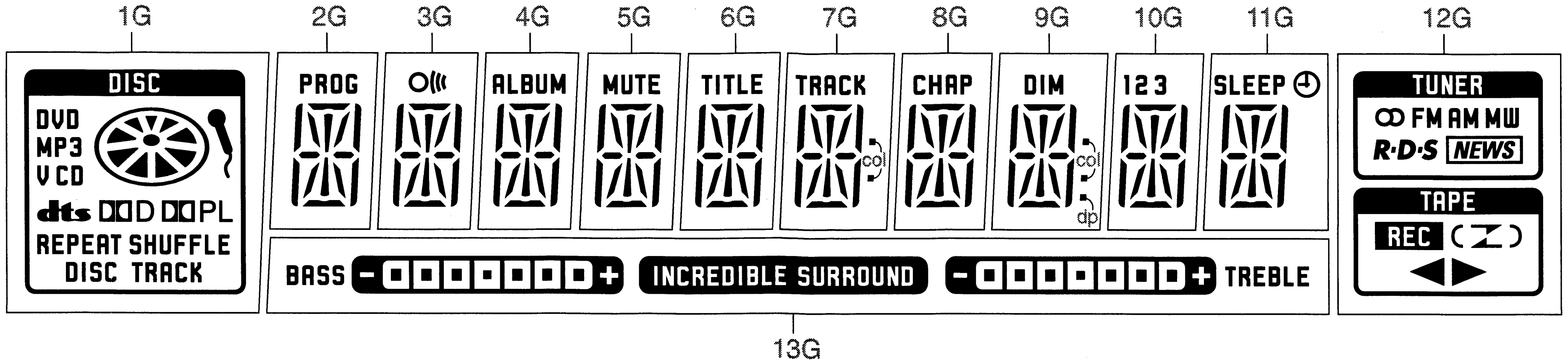
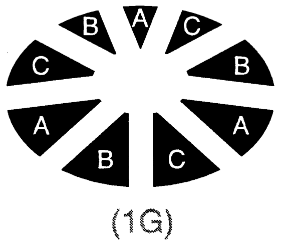
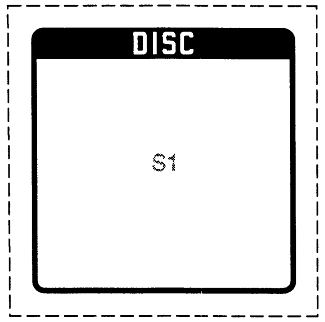
TECHNICAL REMARKS

FTD DISPLAY PIN CONNECTION

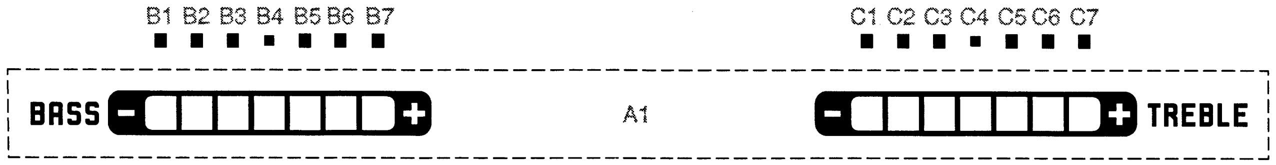

1G
2G
3G
4G
5G
6G
7G
8G
9G
10G
11G
12G
DISC
DVD
MP3
V CD
dts DDD DDPL
REPEAT SHUFFLE
DISC TRACK
PROG
O(((
ALBUM
MUTE
TITLE
TRACK
col
CHAP
DIM
col
dp
123
SLEEP
TUNER
ꝏ FM AM MW
R·D·S NEWS
TAPE
REC
BASS
INCREDIBLE SURROUND
TREBLE
13G



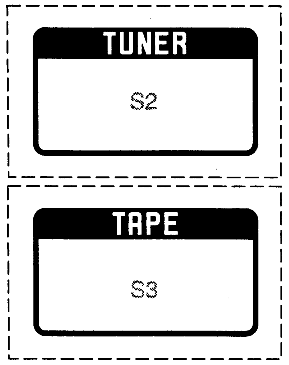
(1G)



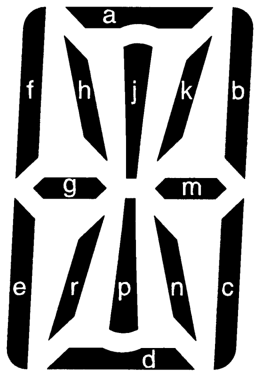
(1G)


B1 B2 B3 B4 B5 B6 B7
C1 C2 C3 C4 C5 C6 C7
BASS
A1
TREBLE

(13G)


TUNER
S2
TAPE
S3

(12G)

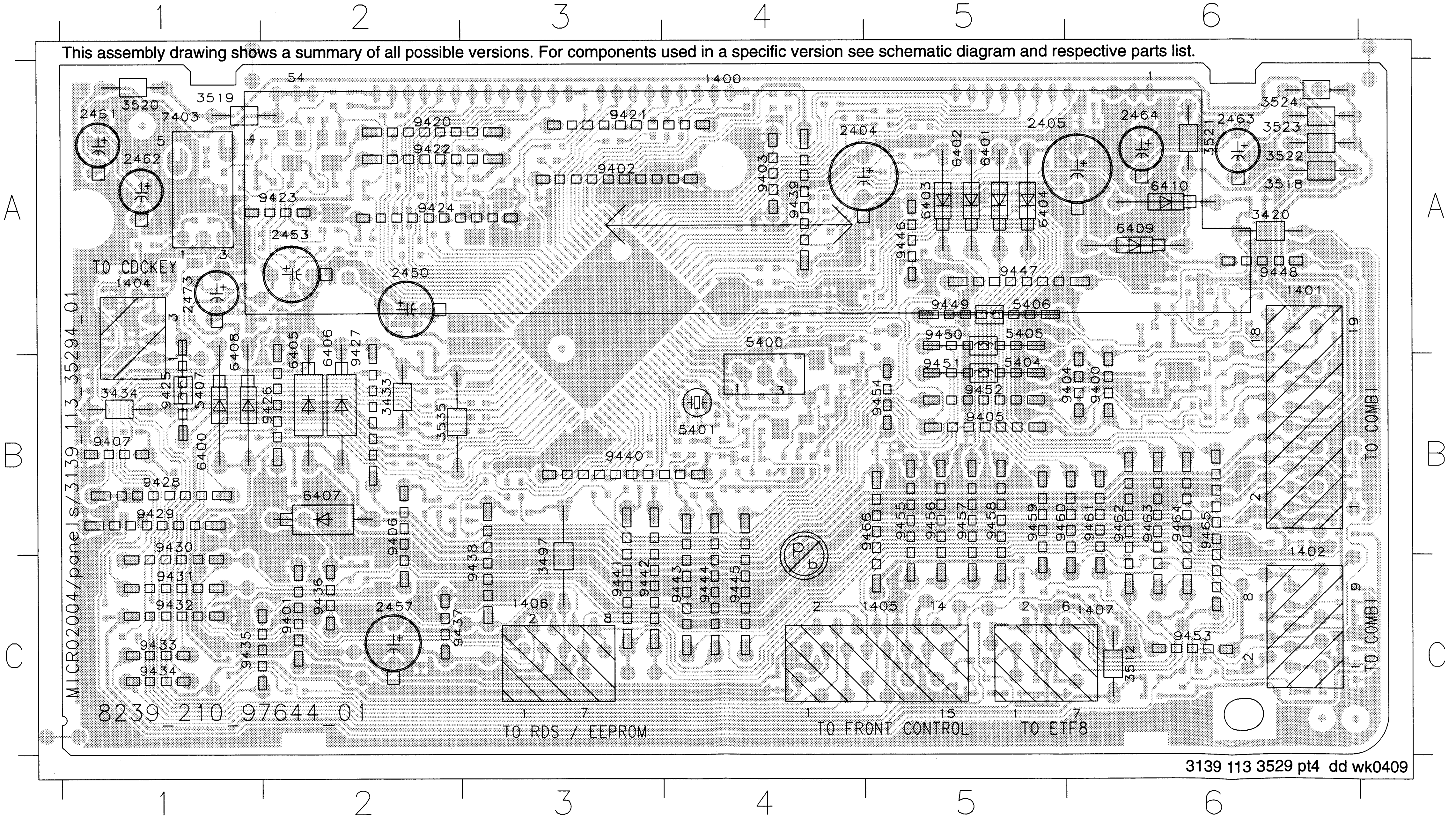

a
f
h
j
k
b
g
m
e
r
p
n
c
d

(2G - 11G)

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G
P1	S1	-	-	-	-	-	col	-	col	1	-	S2	INCREDIBLE SURROUND
P2	DVD	-	-	-	-	-	-	-	dp	2	SLEEP	ꝏ	A1
P3	MP3	PROG	O(((	ALBUM	MUTE	TITLE	TRACK	CHAP	DIM	3	🕘	FM	B1
P4	V	a	a	a	a	a	a	a	a	a	a	AM	B2
P5	CD	h	h	h	h	h	h	h	h	h	h	MW	B3
P6	dts	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	j , p	R·D·S	B4
P7	DDD	k	k	k	k	k	k	k	k	k	k	NEWS	B5
P8	DDPL	b	b	b	b	b	b	b	b	b	b	S3	B6
P9	REPEAT	f	f	f	f	f	f	f	f	f	f	REC	B7
P10	SHUFFLE	m	m	m	m	m	m	m	m	m	m	(	C1
P11	DISC	g	g	g	g	g	g	g	g	g	g	)	C2
P12	TRACK	c	c	c	c	c	c	c	c	c	c	→	C3
P13	🎤	e	e	e	e	e	e	e	e	e	e	←	C4
P14	⊙	r	r	r	r	r	r	r	r	r	r	◀	C5
P15	B	n	n	n	n	n	n	n	n	n	n	▶	C6
P16	A	d	d	d	d	d	d	d	d	d	d	-	C7
P17	C	-	-	-	-	-	-	-	-	-	-	-	-

DISPLAY BOARD - COMPONENT LAYOUT

1400	A4
1401	A6
1402	B6
1404	A1
1405	C5
1406	C3
1407	C6
2404	A4
2405	A5
2450	A2
2453	A2
2457	C2
2461	A1
2462	A1
2463	A6
2464	A6
2473	A1
3420	A6
3433	B2
3434	B1
3497	C3
3512	C6
3518	A6
3519	A1
3520	A1
3521	A6
3522	A6
3523	A6
3524	A6
3535	B2
5400	A4
5401	B4
5404	B5
5405	A5
5406	A5
5407	B1
6400	B1
6401	A5
6402	A5
6403	A5
6404	A5
6405	A2
6406	A2
6407	B2
6408	A1
6409	A6
6410	A6
7403	A1
9400	B6
9401	C2
9402	A3
9403	A4
9404	B6
9405	B5
9406	B2
9407	B1
9420	A2
9421	A3
9422	A2
9423	A2
9424	A2
9425	B1
9426	B2
9427	A2
9428	B1
9429	B1
9430	B1
9431	C1
9432	C1
9433	C1
9434	C1
9435	C1
9436	C2
9437	C2
9438	C3
9439	A4
9440	B3
9441	C3
9442	C3
9443	C4
9444	C4
9445	C4
9446	A5
9447	A5
9448	A6
9449	A5
9450	A5
9451	B5
9452	B5
9453	C6
9454	B5
9455	B5
9456	B5
9457	B5
9458	B5
9459	B5
9460	B5
9461	B6
9462	B6
9463	B6
9464	B6
9465	B6
9466	B5



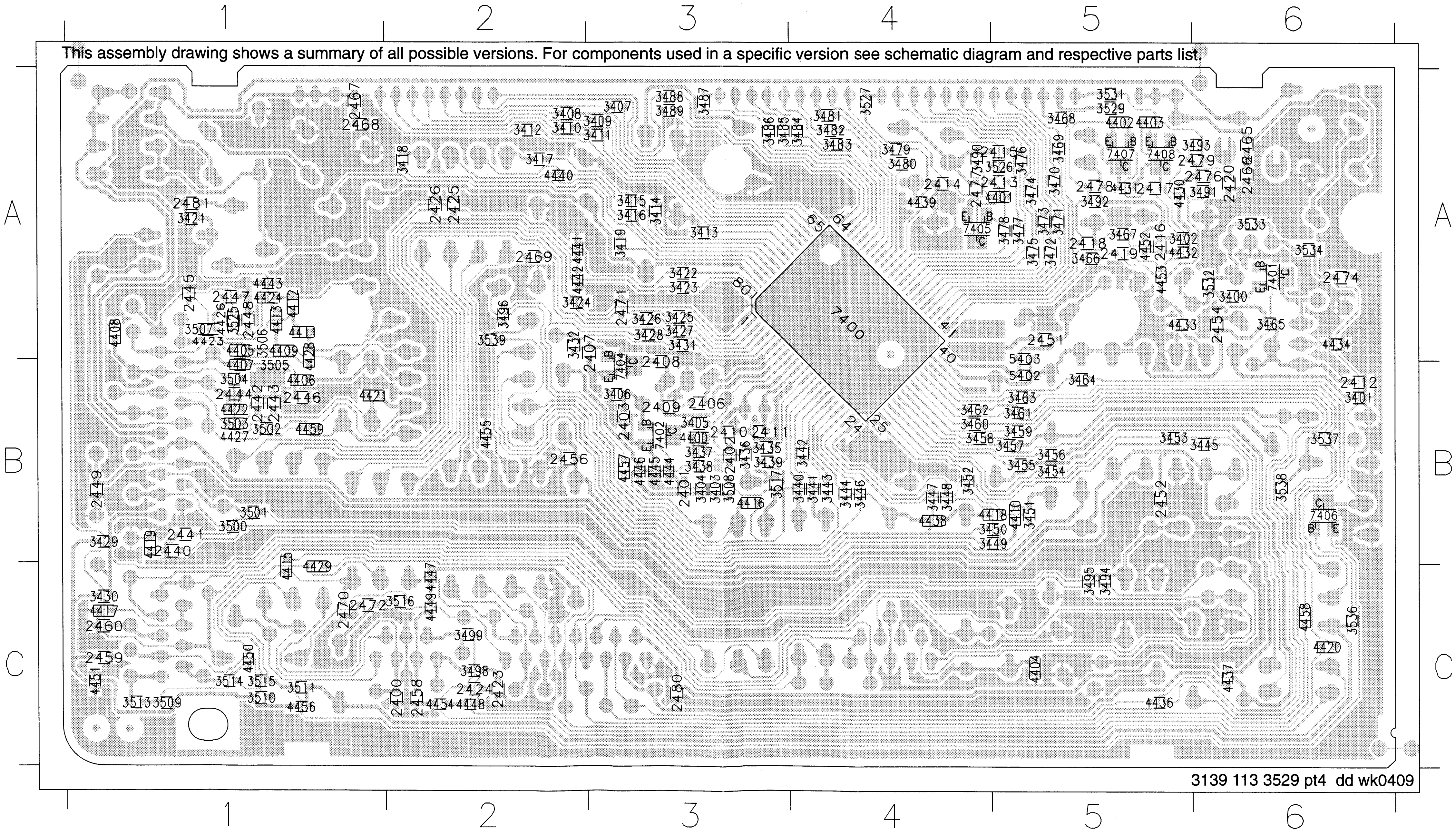
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1
2
3
4
5
6
A
B
C
1400
1401
1402
1404
1405
1406
1407
7403
5400
5401
TO CDCKEY
TO COMBI
TO RDS / EEPROM
TO FRONT CONTROL
TO ETF8
MICRO2004/panels/3139_113_35294_01
8239_210_97644_01

3139 113 3529 pt4 dd wk0409

DISPLAY BOARD - CHIP LAYOUT

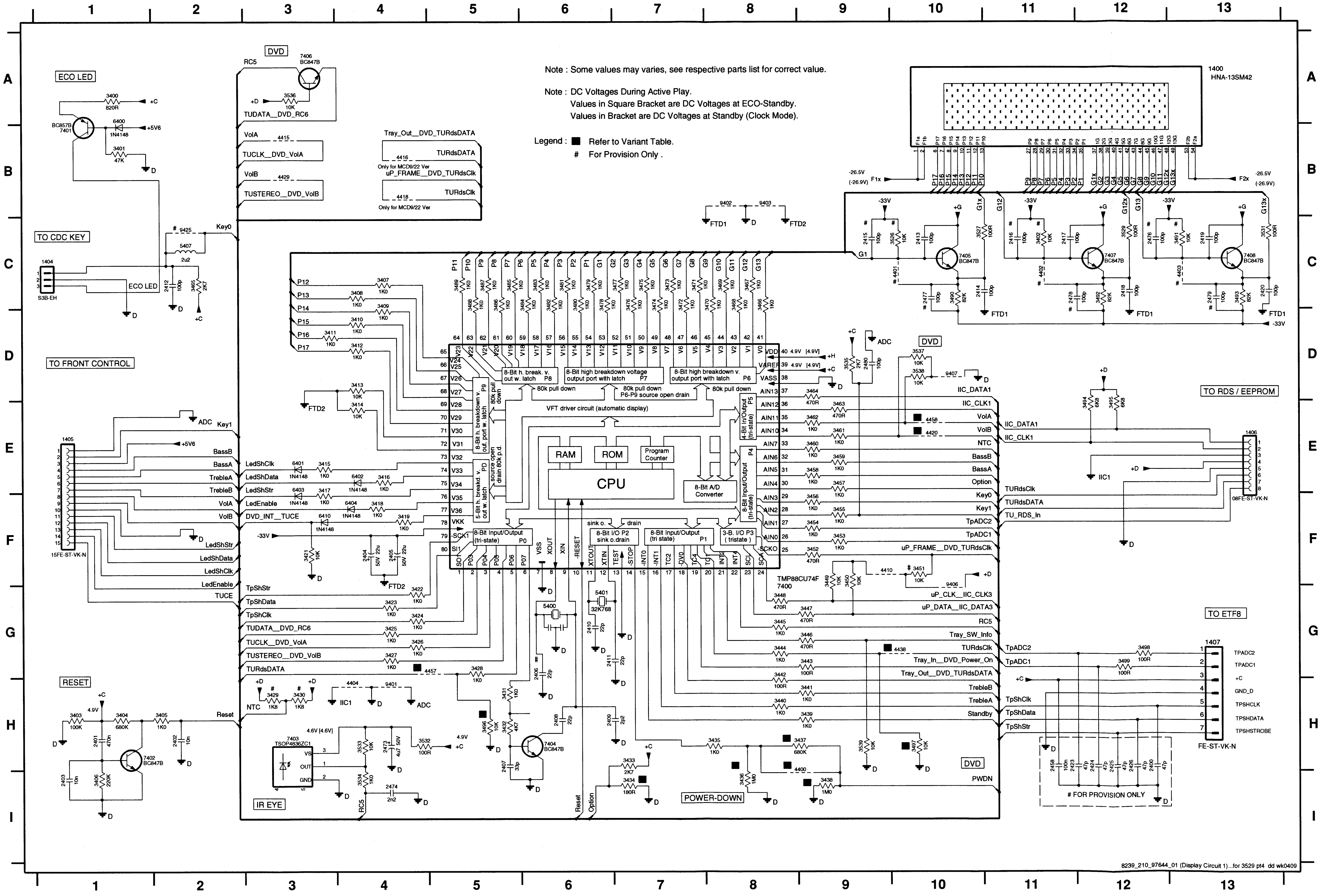
2400	C2	2423	C2	2459	C1	3402	A5	3422	A3	3443	B4	3462	B4	3481	A4	3501	B1	3529	A5	4410	B5	4431	A5	4451	C1
2401	B3	2424	C2	2460	C1	3403	B3	3423	A3	3444	B4	3463	B5	3482	A4	3502	B1	3531	A5	4411	A1	4432	A5	4452	A5
2402	B3	2425	A2	2465	A6	3404	B3	3424	A2	3445	B6	3464	B5	3483	A4	3503	B1	3532	A6	4412	A1	4433	A5	4453	A5
2403	B3	2426	A2	2466	A6	3405	B3	3425	A3	3446	B4	3465	A6	3484	A4	3504	B1	3533	A6	4413	A1	4434	A6	4454	C2
2406	B3	2440	B1	2467	A1	3406	B3	3426	A3	3447	B4	3466	A5	3485	A3	3505	B1	3534	A6	4415	C1	4436	C5	4455	B2
2407	A3	2441	B1	2468	A1	3407	A3	3427	A3	3448	B4	3467	A5	3486	A3	3506	A1	3536	C6	4416	B3	4437	C6	4456	C1
2408	B3	2442	B1	2469	A2	3408	A2	3428	A3	3449	B5	3468	A5	3487	A3	3507	A1	3537	B6	4417	C1	4438	B4	4457	B3
2409	B3	2443	B1	2470	C1	3409	A3	3429	B1	3450	B5	3469	A5	3488	A3	3508	B3	3538	B6	4418	B5	4439	A4	4458	C6
2410	B3	2444	B1	2471	A3	3410	A2	3430	C1	3451	B5	3470	A5	3489	A3	3509	C1	3539	A2	4419	B1	4440	A2	4459	B1
2411	B3	2445	A1	2472	C1	3411	A3	3431	A3	3452	B4	3471	A5	3490	A4	3510	C1	4400	B3	4420	C6	4441	A2	5402	B5
2412	B6	2446	B1	2474	A6	3412	A2	3432	A2	3453	B5	3472	A5	3491	A6	3511	C1	4401	A5	4421	B1	4442	A2	5403	A5
2413	A5	2447	A1	2476	A6	3413	A3	3435	B3	3454	B5	3473	A5	3492	A5	3513	C1	4402	A5	4422	B1	4443	A1	7400	A4
2414	A4	2448	A1	2477	A4	3414	A3	3436	B3	3455	B5	3474	A5	3493	A6	3514	C1	4403	A5	4423	A1	4444	B3	7401	A6
2415	A5	2449	B1	2478	A5	3415	A3	3437	B3	3456	B5	3475	A5	3494	C5	3515	C1	4404	C5	4424	A1	4445	B3	7402	B3
2416	A5	2451	A5	2479	A6	3416	A3	3438	B3	3457	B5	3476	A5	3495	C5	3516	C2	4405	A1	4426	A1	4446	B3	7404	B3
2417	A5	2452	B5	2480	C3	3417	A2	3439	B3	3458	B4	3477	A5	3496	A2	3517	B3	4406	B1	4427	B1	4447	C2	7405	A4
2418	A5	2454	A6	2481	A1	3418	A2	3440	B4	3459	B5	3478	A5	3498	C2	3525	A1	4407	B1	4428	A1	4448	C2	7406	B6
2419	A5	2456	B2	3400	A6	3419	A3	3441	B4	3460	B4	3479	A4	3499	C2	3526	A5	4408	A1	4429	C1	4449	C2	7407	A5
2420	A6	2458	C2	3401	B6	3421	A1	3442	B4	3461	B5	3480	A4	3500	B1	3527	A4	4409	A1	4430	A5	4450	C1	7408	A5



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3529 pt4 dd wk0409

DISPLAY BOARD - CIRCUIT DIAGRAM PART 1



Note : Some values may varies, see respective parts list for correct value.

Note : DC Voltages During Active Play.
Values in Square Bracket are DC Voltages at ECO-Standby.
Values in Bracket are DC Voltages at Standby (Clock Mode).

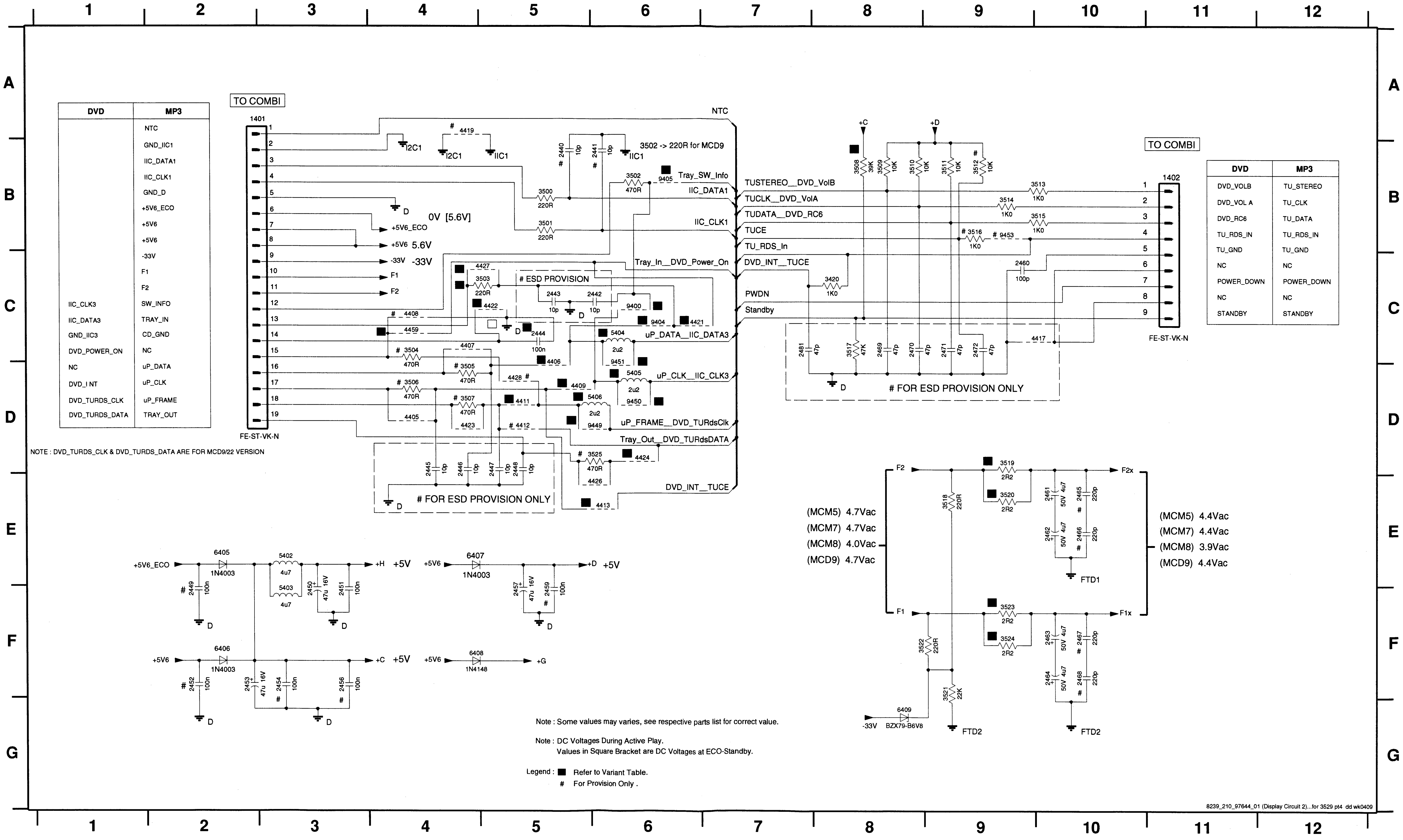
Legend : ■ Refer to Variant Table.
# For Provision Only .

1 2 3 4 5 6 7 8 9 10 11 12 13
A B C D E F G H I
ECO LED
TO CDC KEY
TO FRONT CONTROL
RESET
DVD
IR EYE
POWER-DOWN
TO RDS / EEPROM
TO ETF8
# FOR PROVISION ONLY
1400 HNA-13SM42
7400 TMP88CU74F
CPU
RAM
ROM
Program Counter
8-Bit A/D Converter
VFT driver circuit (automatic display)
8-Bit high breakdown voltage output port with latch P7
8-Bit high breakdown V. output port with latch P6
8-Bit h. break. v. out w. latch P8
80k pull down
P6-P9 source open drain
8-Bit Input/Output (tri-state) P0
8-Bit I/O P2 sink o.drain
8-Bit Input/Output (tri state) P1
3-B. I/O P3 (tristate)
7401 BC857B
7402 BC847B
7403 TSOP4836ZC1
7404 BC847B
7405 BC847B
7406 BC847B
7407 BC847B
7408 BC847B
1404 S3B-EH
1405 15FE-ST-VK-N
1406 08FE-ST-VK-N
1407 FE-ST-VK-N
TUDATA__DVD_RC6
TUCLK__DVD_VolA
TUSTEREO__DVD_VolB
Tray_Out__DVD_TURdsDATA
uP_FRAME__DVD_TURdsClk
Only for MCD9/22 Ver
IIC_DATA1
IIC_CLK1
TURdsClk
TURdsDATA
TU_RDS_In
TpADC2
TpADC1
TpShClk
TpShData
TpShStr
uP_CLK__IIC_CLK3
uP_DATA__IIC_DATA3
Tray_SW_Info
Tray_In__DVD_Power_On
TrebleB
TrebleA
Standby
BassB
BassA
Option
Key0
Key1
NTC
VolA
VolB
RC5
PWDN
LedShClk
LedShData
LedShStr
LedEnable
DVD_INT__TUCE
Reset
8239_210_97644_01 (Display Circuit 1)...for 3529 pt4 dd wk0409

1400	A13
1404	C1
1405	E1
1406	E13
1407	G13
2400	H12
2401	H1
2402	H2
2403	I1
2404	F4
2405	F4
2406	G6
2407	H5
2408	H6
2409	H6
2410	G6
2411	G6
2412	C2
2413	C10
2414	C10
2415	C9
2416	C11
2417	C11
2418	C12
2419	C13
2420	C13
2423	H11
2424	H12
2425	H12
2426	H12
2458	H11
2473	H4
2474	I4
2476	C12
2477	C10
2478	C11
2479	C13
2480	D9
3400	A1
3401	B1
3402	C11
3403	H1
3404	H1
3405	H2
3406	I1
3407	C4
3408	C4
3409	C4
3410	D4
3411	D3
3412	D4
3413	D4
3414	E4
3415	E3
3416	E4
3417	E3
3418	F4
3419	F4
3421	F3
3422	G4
3423	G4
3424	G4
3425	G4
3426	G4
3427	G4
3428	G5
3429	H3
3430	H3
3431	H5
3432	H5
3433	H7
3434	I7
3435	H8
3436	I8
3437	H9
3438	I9
3439	H9
3440	H8
3441	H9
3442	G8
3443	G9
3444	G8
3445	G8
3446	G9
3447	G9
3448	G8
3449	F9
3450	F9
3451	F10
3452	F9
3453	F9
3454	F9
3455	F9
3456	F9
3457	E9
3458	E9
3459	E9
3460	E9
3461	E9
3462	E9
3463	E9
3464	D9
3465	C2
3466	C8
3467	C8
3468	C8
3469	C8
3470	C8
3471	C7
3472	C7
3473	C7
3474	C7
3475	C7
3476	C7
3477	C7
3478	C6
3479	C6
3480	C6
3481	C6
3482	C6
3483	C6
3484	C6
3485	C5
3486	C5
3487	C5
3488	C5
3489	C5
3490	C10
3491	C13
3492	C12
3493	C13
3494	E12
3495	E12
3496	H5
3497	H10
3498	G12
3499	G12
3526	C10
3527	C10
3529	C12
3531	C13
3532	H4
3533	H4
3534	I4
3535	D9
3536	A3
3537	D10
3538	D10
3539	H9
4400	I9
4401	C10
4402	C11
4403	C13
4404	H4
4410	F9
4415	B3
4416	B4
4418	B4
4420	E10
4429	B3
4438	G10
4457	G5
4458	E10
5400	G6
5401	G6
5407	C2
6400	A1
6401	E3
6402	E4
6403	E3
6404	F4
6410	F3
7400	G8
7401	B1
7402	H1
7403	H3
7404	H6
7405	C10
7406	A3
7407	C12
7408	C13
9401	H4
9402	B8
9403	B8
9406	G10
9407	D10
9425	C2

DISPLAY BOARD - CIRCUIT DIAGRAM PART 2

1401	A3
1402	B11
2440	B5
2441	B6
2442	C6
2443	C5
2444	C5
2445	D4
2446	D4
2447	D5
2448	D5
2449	F2
2450	F3
2451	F3
2452	F2
2453	F2
2454	F3
2456	F3
2457	F5
2459	F5
2460	C9
2461	E10
2462	E10
2463	F10
2464	F10
2465	E10
2466	E10
2467	F10
2468	F10
2469	C8
2470	C8
2471	C9
2472	C9
2481	C7
3420	C8
3500	B5
3501	B5
3502	B6
3503	C5
3504	C4
3505	D4
3506	D4
3507	D4
3508	B8
3509	B8
3510	B8
3511	B9
3512	B9
3513	B10
3514	B9
3515	B10
3516	B9
3517	C8
3518	E9
3519	D9
3520	E9
3521	F9
3522	F8
3523	F9
3524	F9
3525	D6
4405	D4
4406	D5
4407	C4
4408	C4
4409	D5
4411	D5
4412	D5
4413	E6
4417	C10
4419	A4
4421	C6
4422	C5
4423	D4
4424	D6
4426	E6
4427	C5
4428	D5
4459	C4
5402	E3
5403	F3
5404	C6
5405	D6
5406	D6
6405	E2
6406	F2
6407	E4
6408	F4
6409	G8
9400	C6
9404	C6
9405	B6
9449	D6
9450	D6
9451	D6
9453	B9


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
TO COMBI
1401
FE-ST-VK-N
NTC
# 4419
I2C1
IIC1
2440 10p #
2441 10p #
3502 -> 220R for MCD9
3502 470R
9405
Tray_SW_Info
3500 220R
IIC_DATA1
D
0V [5.6V]
+5V6_ECO
3501 220R
IIC_CLK1
+5V6 5.6V
-33V -33V
F1
F2
Tray_In__DVD_Power_On
4427
3503 220R
# ESD PROVISION
2443 10p
2442 10p
4422
9400
9404
4421
# 4408
4459
2444 100n
5404 2u2
uP_DATA__IIC_DATA3
# 3504 470R
4407
4406
9451
# 3505 470R
4428 #
4409
5405 2u2
uP_CLK__IIC_CLK3
# 3506 470R
4411
9450
# 3507 470R
5406 2u2
4405
4423
# 4412
9449
uP_FRAME__DVD_TURdsClk
Tray_Out__DVD_TURdsDATA
# 3525 470R
4424
2445 10p
2446 10p
2447 10p
2448 10p
4426
DVD_INT__TUCE
# FOR ESD PROVISION ONLY
4413
TUSTEREO__DVD_VolB
TUCLK__DVD_VolA
TUDATA__DVD_RC6
TUCE
TU_RDS_In
DVD_INT__TUCE
PWDN
Standby
+C
+D
3508 39K
3509 10K
3510 10K
3511 10K
# 3512 10K
3513 1K0
3514 1K0
3515 1K0
# 3516 1K0
# 9453
3420 1K0
2460 100p
2481 47p
3517 47K
2469 47p
2470 47p
2471 47p
2472 47p
4417
# FOR ESD PROVISION ONLY
1402
+5V6_ECO
6405 1N4003
5402 4u7
5403 4u7
# 2449 100n
2450 47u 16V
2451 100n
+H +5V
+5V6
6407 1N4003
2457 47u 16V
# 2459 100n
+D +5V
+5V6
6406 1N4003
# 2452 100n
2453 47u 16V
# 2454 100n
# 2456 100n
+C +5V
+5V6
6408 1N4148
+G
F2
3519 2R2
3520 2R2
3518 220R
F2x
2461 50V 4u7
# 2465 220p
2462 50V 4u7
# 2466 220p
FTD1
(MCM5) 4.7Vac
(MCM7) 4.7Vac
(MCM8) 4.0Vac
(MCD9) 4.7Vac
(MCM5) 4.4Vac
(MCM7) 4.4Vac
(MCM8) 3.9Vac
(MCD9) 4.4Vac
F1
3523 2R2
3524 2R2
F1x
3522 220R
3521 22K
2463 50V 4u7
# 2467 220p
2464 50V 4u7
# 2468 220p
-33V
6409 BZX79-B6V8
FTD2
FTD2

DVD	MP3
	NTC
	GND_IIC1
	IIC_DATA1
	IIC_CLK1
	GND_D
	+5V6_ECO
	+5V6
	+5V6
	-33V
	F1
	F2
IIC_CLK3	SW_INFO
IIC_DATA3	TRAY_IN
GND_IIC3	CD_GND
DVD_POWER_ON	NC
NC	uP_DATA
DVD_I NT	uP_CLK
DVD_TURDS_CLK	uP_FRAME
DVD_TURDS_DATA	TRAY_OUT

NOTE : DVD_TURDS_CLK & DVD_TURDS_DATA ARE FOR MCD9/22 VERSION

DVD	MP3
DVD_VOLB	TU_STEREO
DVD_VOL A	TU_CLK
DVD_RC6	TU_DATA
TU_RDS_IN	TU_RDS_IN
TU_GND	TU_GND
NC	NC
POWER_DOWN	POWER_DOWN
NC	NC
STANDBY	STANDBY

Note : Some values may varies, see respective parts list for correct value.

Note : DC Voltages During Active Play.
Values in Square Bracket are DC Voltages at ECO-Standby.

Legend : ■ Refer to Variant Table.
For Provision Only .

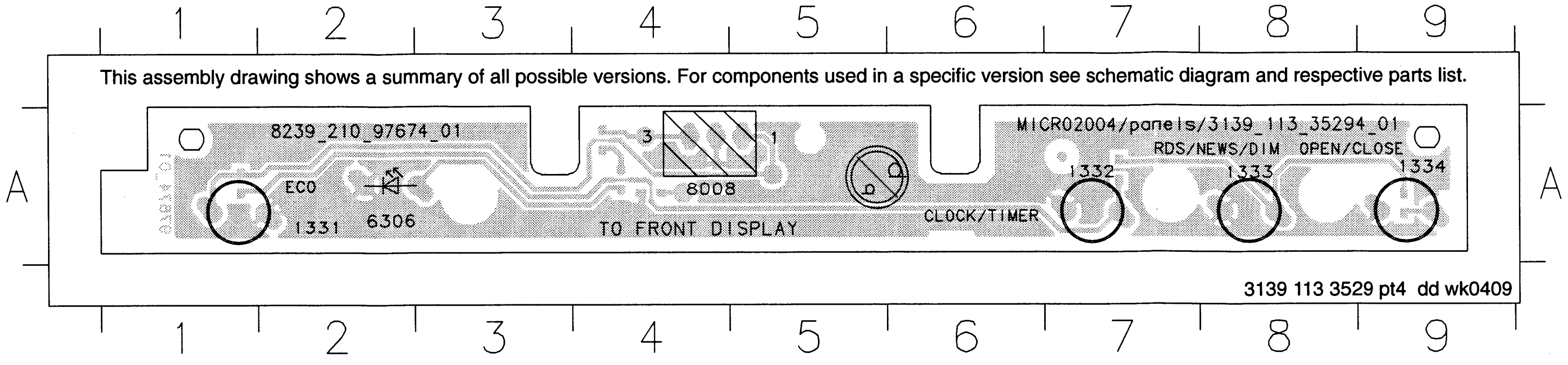
8239_210_97644_01 (Display Circuit 2)...for 3529 pt4 dd wk0409

DISPLAY BOARD - VARIANT TABLE

	MCM7/22 MCM7/25	MCM7/37	MCM8/22 MCM8/25	MCM8/21
2444	100N	100N	100N	100N
3434	180R	180R	470R	470R
3436	1M	1M	2M2	2M2
3437	680K	680K	-	-
3438	1M	1M	-	-
3496	-	10K	-	10K
3497	-	10K	-	10K
3503	-	-	-	-
3508	39K	39K	-	-
3519	2R2	2R2	1R	1R
3520	2R2	2R2	1R	1R
3523	2R2	2R2	1R	1R
3524	2R2	2R2	1R	1R
4400	-	-	X	X
4406	X	X	X	X
4409	X	X	X	X
4411	X	X	X	X
4413	-	-	-	-
4420	X	X	X	X
4421	X	X	X	X
4422	-	-	-	-
4424	X	X	X	X
4427	X	X	X	X
4438	X	-	X	-
4457	X	-	X	-
4458	X	X	X	X
4459	-	-	-	-
5404	2U2	2U2	2U2	2U2
5405	2U2	2U2	2U2	2U2
5406	2U2	2U2	2U2	2U2
9400	-	-	-	-
9404	-	-	-	-
9405	X	X	X	X
9449	-	-	-	-
9450	-	-	-	-
9451	-	-	-	-

X - Item in use.

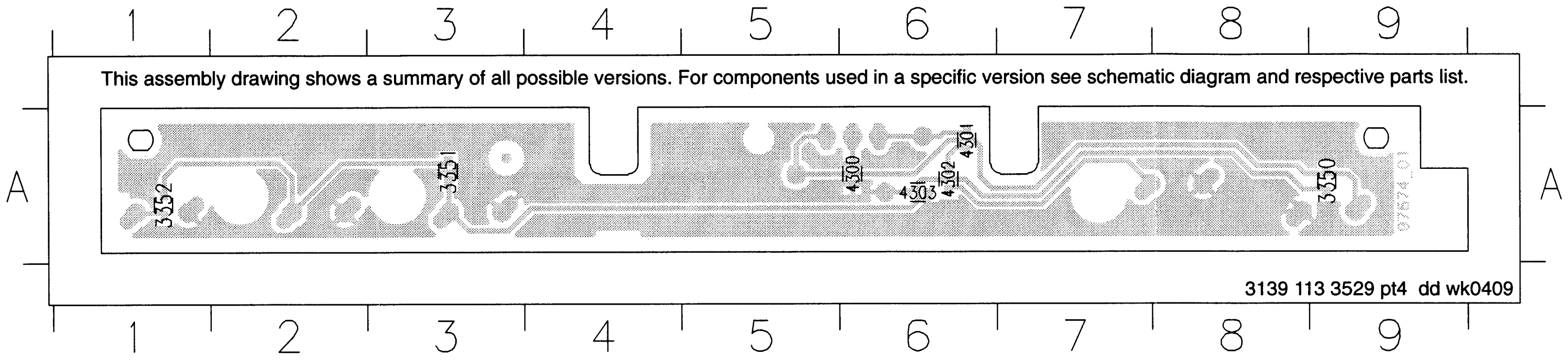
TOP KEY BOARD - COMPONENT LAYOUT


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1 2 3 4 5 6 7 8 9
A
8239_210_97674_01
ECO
1331
6306
8008
TO FRONT DISPLAY
CLOCK/TIMER
MICRO2004/panels/3139_113_35294_01
RDS/NEWS/DIM OPEN/CLOSE
1332
1333
1334
3139 113 3529 pt4 dd wk0409

1331	A2
1332	A7
1333	A8
1334	A9
6306	A2
8008	A4

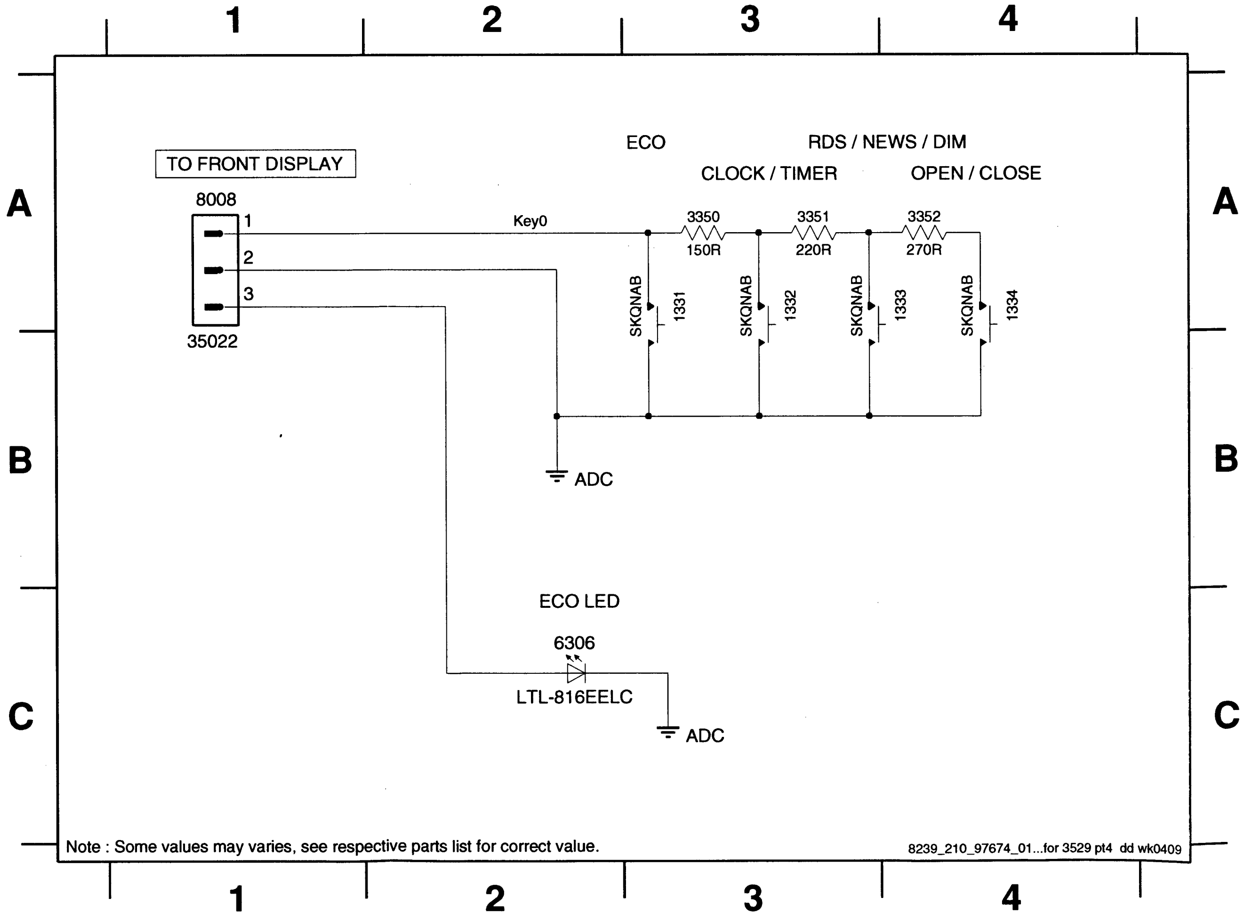
TOP KEY BOARD - CHIP LAYOUT


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1 2 3 4 5 6 7 8 9
A
3352
3351
4300
4303
4302
4301
3350
3139 113 3529 pt4 dd wk0409

3350	A9
3351	A3
3352	A1
4300	A6
4301	A6
4302	A6
4303	A6

TOP KEY BOARD - CIRCUIT DIAGRAM

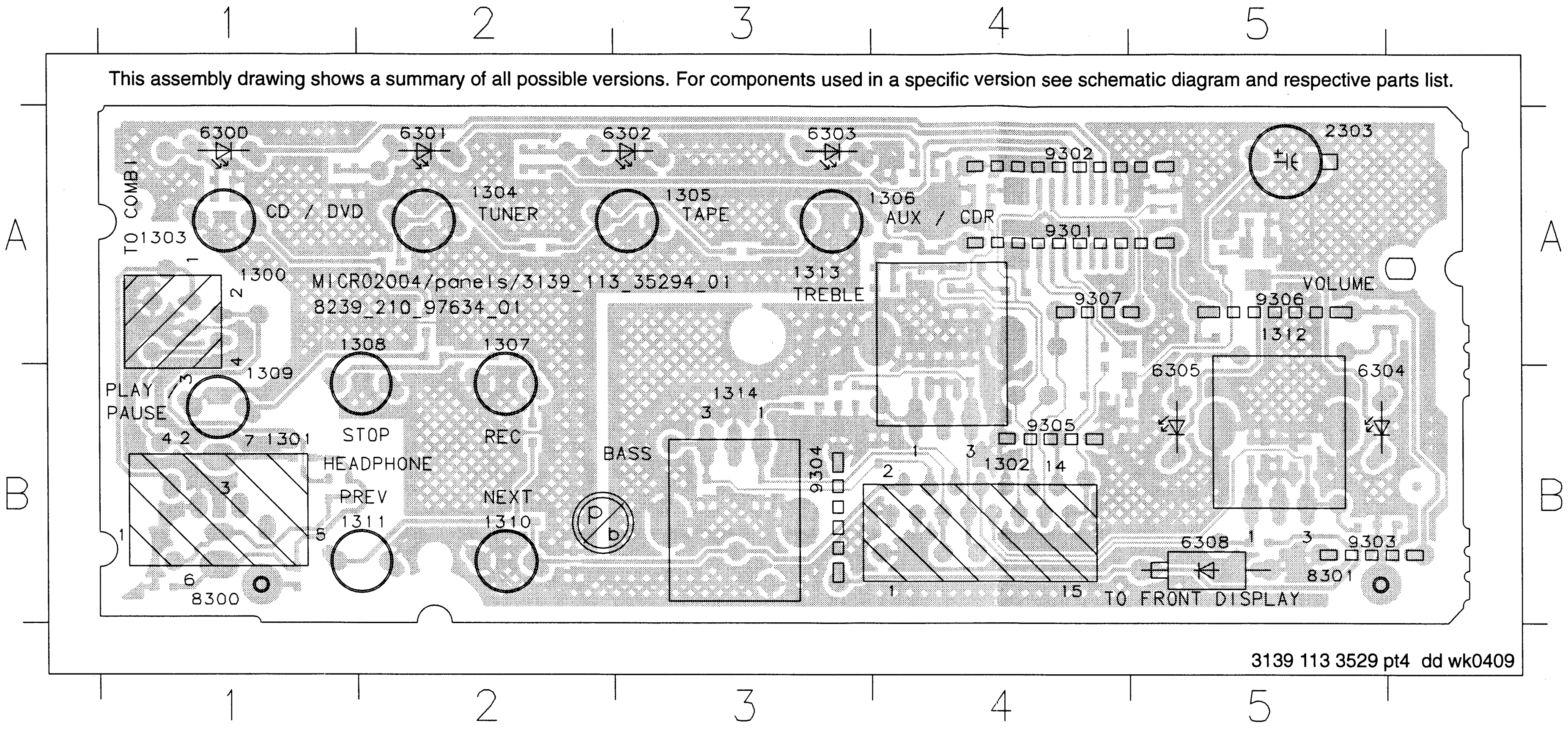


1 2 3 4
A B C
TO FRONT DISPLAY
8008
1
2
3
35022
ECO
CLOCK / TIMER
RDS / NEWS / DIM
OPEN / CLOSE
Key0
3350
150R
3351
220R
3352
270R
SKQNAB
1331
1332
1333
1334
ADC
ECO LED
6306
LTL-816EELC
ADC
8239_210_97674_01...for 3529 pt4 dd wk0409

Note : Some values may varies, see respective parts list for correct value.

1331	A3
1332	A3
1333	A4
1334	A4
3350	A3
3351	A3
3352	A4
6306	C2
8008	A1

CONTROL BOARD - COMPONENT LAYOUT



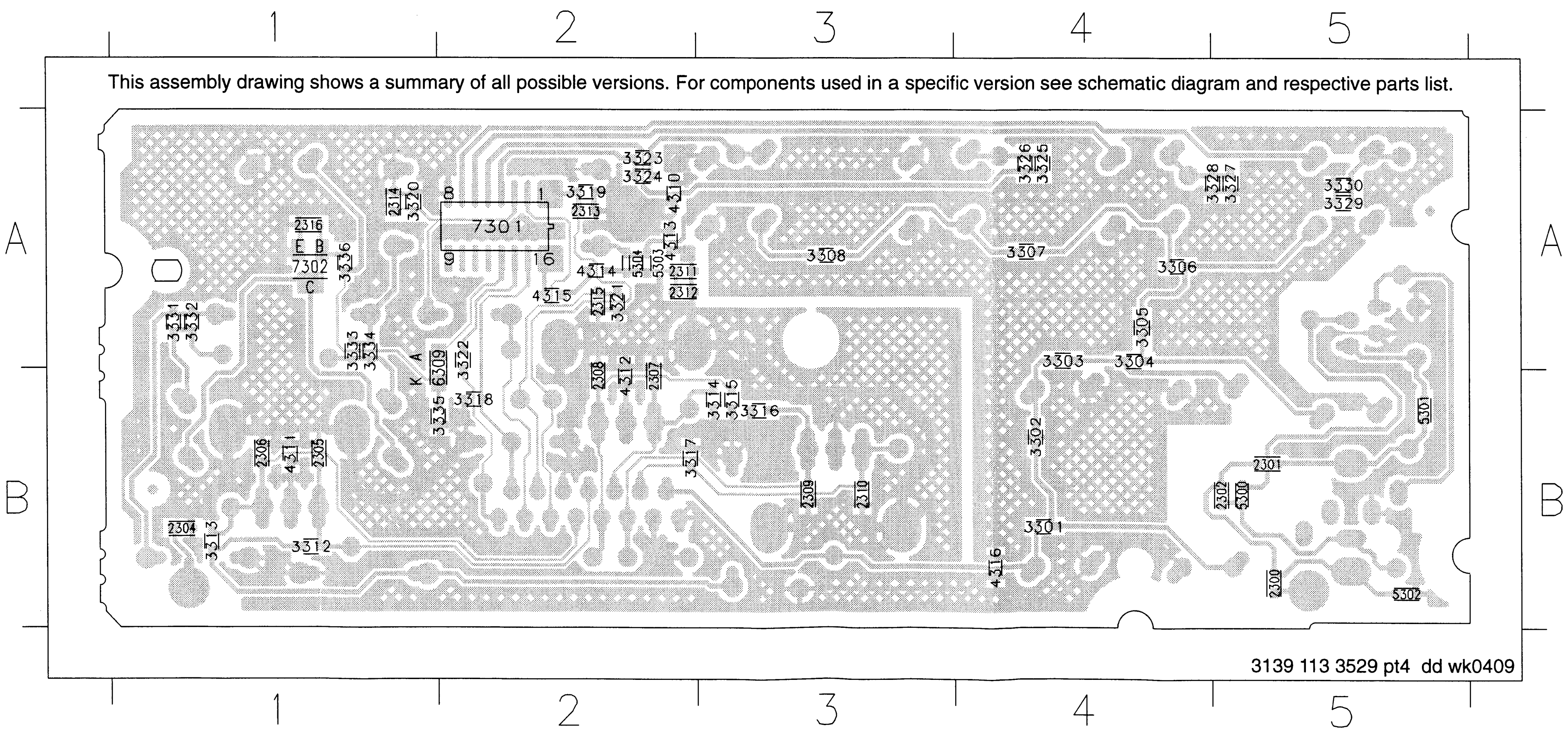
This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1
2
3
4
5
A
B
6300
6301
6302
6303
2303
9302
9301
TO COMBI
1303
CD / DVD
1304
TUNER
1305
TAPE
1306
AUX / CDR
1313
TREBLE
1300
MICRO2004/panels/3139_113_35294_01
8239_210_97634_01
9307
9306
VOLUME
1312
1308
1307
1309
PLAY / PAUSE
1301
STOP
REC
1314
BASS
HEADPHONE
PREV
NEXT
1311
1310
9304
9305
1302
6305
6304
6308
9303
8301
8300
TO FRONT DISPLAY

3139 113 3529 pt4 dd wk0409

1300	A1	9305	B4
1301	B1	9306	A5
1302	B4	9307	A4
1303	A1		
1304	A2		
1305	A3		
1306	A4		
1307	A2		
1308	A2		
1309	B1		
1310	B2		
1311	B2		
1312	A5		
1313	A3		
1314	B3		
2303	A5		
6300	A1		
6301	A2		
6302	A3		
6303	A3		
6304	B5		
6305	B5		
6308	B5		
8300	B1		
8301	B5		
9301	A4		
9302	A4		
9303	B5		
9304	B3		

CONTROL BOARD - CHIP LAYOUT



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

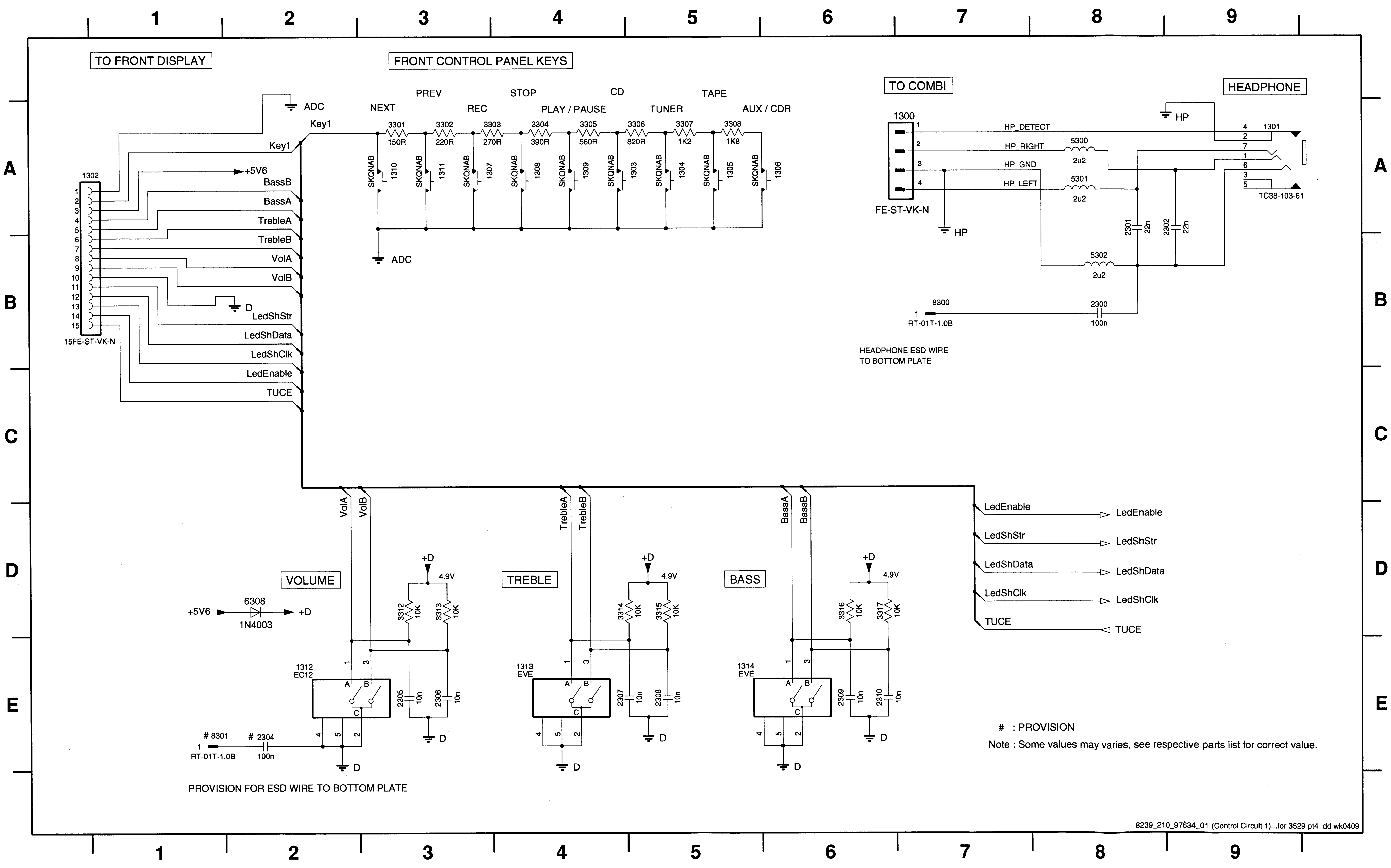
1
2
3
4
5
A
B
7301
7302
3323
3324
3319
3326
3325
3328
3327
3330
3329
3308
3307
3306
3305
3303
3304
3302
3301
3312
3313
3317
3318
3316
3335
6309
4316
2300
2301
5302

3139 113 3529 pt4 dd wk0409

2300	B5	3317	B2	5302	B5
2301	B5	3318	B2	5303	A2
2302	B5	3319	A2	5304	A2
2304	B1	3320	A1	6309	A1
2305	B1	3321	A2	7301	A2
2306	B1	3322	A2	7302	A1
2307	B2	3323	A2		
2308	B2	3324	A2		
2309	B3	3325	A4		
2310	B3	3326	A4		
2311	A2	3327	A5		
2312	A2	3328	A5		
2313	A2	3329	A5		
2314	A1	3330	A5		
2315	A2	3331	A1		
2316	A1	3332	A1		
3301	B4	3333	A1		
3302	B4	3334	A1		
3303	A4	3335	B1		
3304	A4	3336	A1		
3305	A4	4310	A2		
3306	A4	4311	B1		
3307	A4	4312	B2		
3308	A3	4313	A2		
3312	B1	4314	A2		
3313	B1	4315	A2		
3314	B3	4316	B4		
3315	B3	5300	B5		
3316	B3	5301	B5		

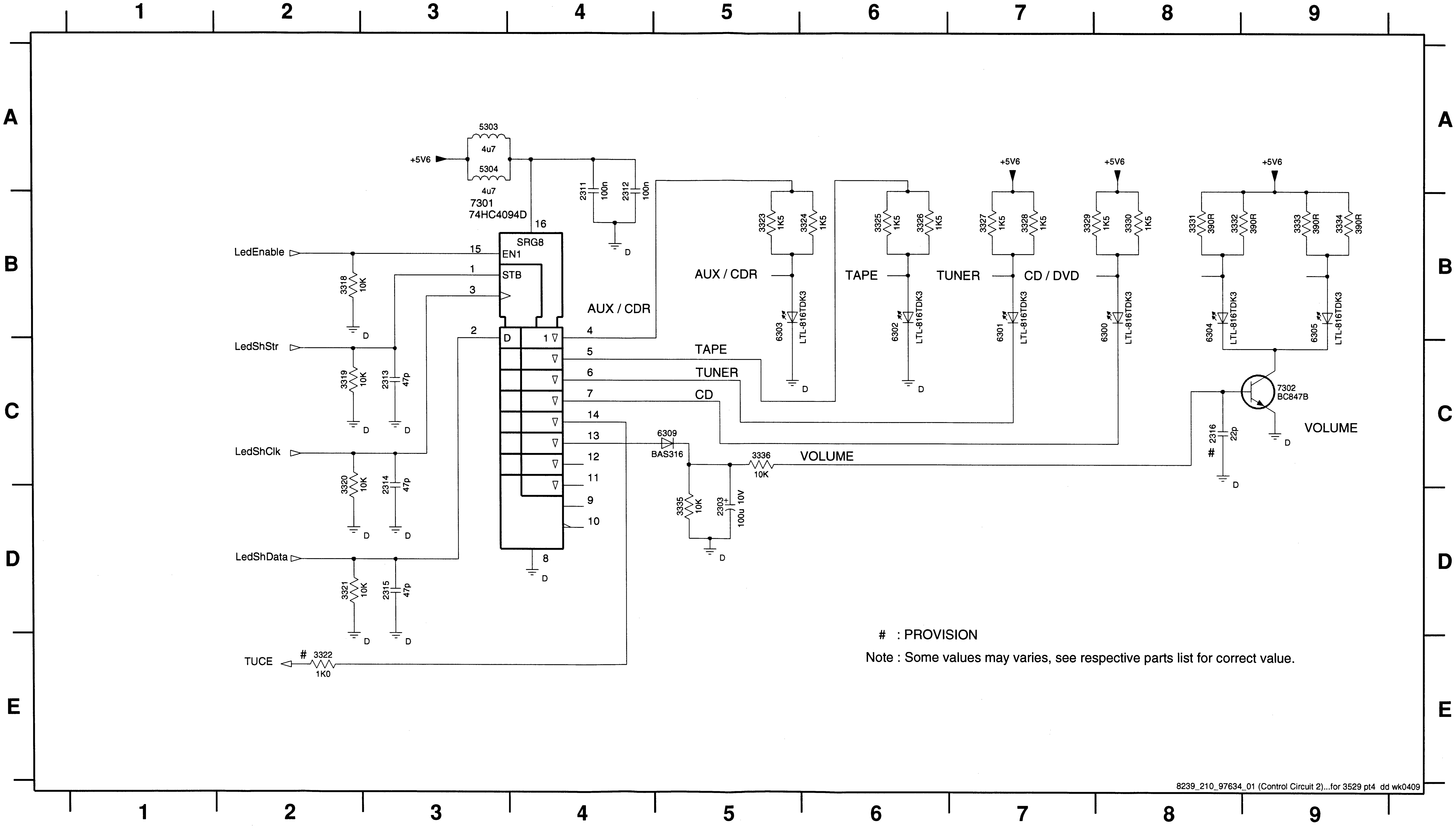
CONTROL BOARD - CIRCUIT DIAGRAM PART 1

1300	A7
1301	A9
1302	A1
1303	A5
1304	A5
1305	A5
1306	A6
1307	A3
1308	A4
1309	A4
1310	A3
1311	A3
1312	E2
1313	E4
1314	E5
2300	B8
2301	A8
2302	A9
2304	E2
2305	E3
2306	E3
2307	E4
2308	E5
2309	E6
2310	E6
3301	A3
3302	A3
3303	A4
3304	A4
3305	A4
3306	A5
3307	A5
3308	A5
3312	D3
3313	D3
3314	D4
3315	D5
3316	D6
3317	D6
5300	A8
5301	A8
5302	B8
6308	D2
8300	B7
8301	E2


1
2
3
4
5
6
7
8
9
A
B
C
D
E
TO FRONT DISPLAY
FRONT CONTROL PANEL KEYS
TO COMBI
HEADPHONE
ADC
Key1
Key1
1302
+5V6
BassB
BassA
TrebleA
TrebleB
VolA
VolB
D
LedShStr
LedShData
LedShClk
LedEnable
TUCE
15FE-ST-VK-N
NEXT
PREV
REC
STOP
PLAY / PAUSE
CD
TUNER
TAPE
AUX / CDR
3301 150R
3302 220R
3303 270R
3304 390R
3305 560R
3306 820R
3307 1K2
3308 1K8
SKQNAB 1310
SKQNAB 1311
SKQNAB 1307
SKQNAB 1308
SKQNAB 1309
SKQNAB 1303
SKQNAB 1304
SKQNAB 1305
SKQNAB 1306
ADC
1300
HP_DETECT
HP_RIGHT
HP_GND
HP_LEFT
FE-ST-VK-N
HP
HP
5300 2u2
5301 2u2
5302 2u2
2301 22n
2302 22n
1301
TC38-103-61
8300
RT-01T-1.0B
2300 100n
HEADPHONE ESD WIRE
TO BOTTOM PLATE
VolA
VolB
TrebleA
TrebleB
BassA
BassB
VOLUME
TREBLE
BASS
+5V6
6308
1N4003
+D
+D
4.9V
3312 10K
3313 10K
3314 10K
3315 10K
3316 10K
3317 10K
1312 EC12
1313 EVE
1314 EVE
A
B
C
2305 10n
2306 10n
2307 10n
2308 10n
2309 10n
2310 10n
D
# 8301
# 2304
RT-01T-1.0B
100n
PROVISION FOR ESD WIRE TO BOTTOM PLATE
LedEnable
LedShStr
LedShData
LedShClk
TUCE
# : PROVISION
Note : Some values may varies, see respective parts list for correct value.
8239_210_97634_01 (Control Circuit 1)...for 3529 pt4 dd wk0409

CONTROL BOARD - CIRCUIT DIAGRAM PART 2

2303 D5	2312 A4	2314 C3	2316 C8	3319 C2	3321 D2	3323 B5	3325 B6	3327 B7	3329 B7	3331 B8	3333 B9	3335 D5	5303 A3	6300 B8	6302 B6	6304 B8	6309 C5	7302 C9
2311 A4	2313 C3	2315 D3	3318 B2	3320 C2	3322 E2	3324 B6	3326 B6	3328 B7	3330 B8	3332 B8	3334 B9	3336 C5	5304 A3	6301 B7	6303 B5	6305 B9	7301 B3	

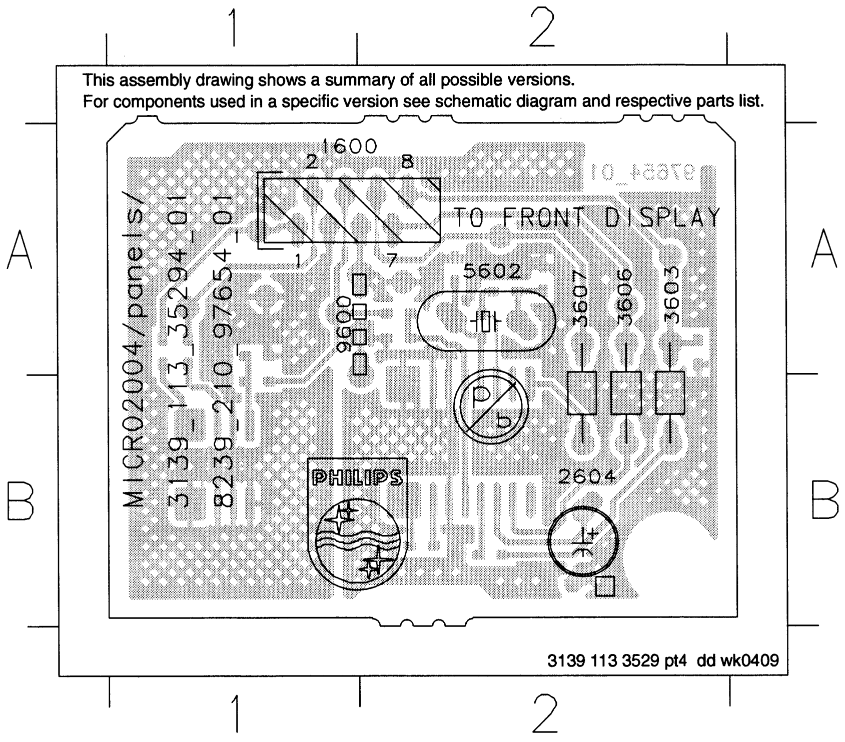

1 2 3 4 5 6 7 8 9
A B C D E
+5V6
5303 4u7
5304 4u7
7301
74HC4094D
16
SRG8
EN1
STB
D
15
1
3
2
8
2311 100n
2312 100n
LedEnable
LedShStr
LedShClk
LedShData
TUCE
3318 10K
3319 10K
3320 10K
3321 10K
2313 47p
2314 47p
2315 47p
# 3322 1K0
AUX / CDR
TAPE
TUNER
CD
CD / DVD
VOLUME
4 5 6 7 14 13 12 11 9 10
6309 BAS316
3336 10K
3335 10K
2303 100u 10V
3323 1K5
3324 1K5
3325 1K5
3326 1K5
3327 1K5
3328 1K5
3329 1K5
3330 1K5
3331 390R
3332 390R
3333 390R
3334 390R
6303 LTL-816TDK3
6302 LTL-816TDK3
6301 LTL-816TDK3
6300 LTL-816TDK3
6304 LTL-816TDK3
6305 LTL-816TDK3
7302 BC847B
# 2316 22p
D
8239_210_97634_01 (Control Circuit 2)...for 3529 pt4 dd wk0409

: PROVISION

Note : Some values may varies, see respective parts list for correct value.

EEPROM BOARD - COMPONENT LAYOUT

1600	A1	3603	A2	3607	A2	9600	A1
2604	B2	3606	A2	5602	A2		

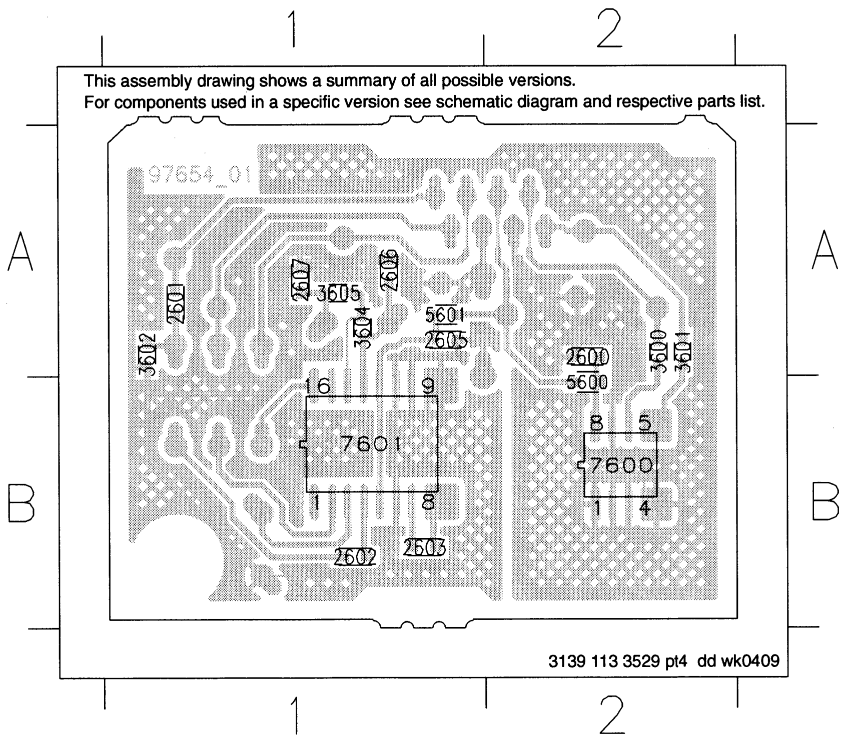

1
2
A
B
1600
2
8
1
7
TO FRONT DISPLAY
97654_01
MICRO2004/panels/
3139_113_35294_01
8239_210_97654_01
9600
5602
3607
3606
3603
2604
PHILIPS

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.

3139 113 3529 pt4 dd wk0409

EEPROM BOARD - CHIP LAYOUT

2600	A2	2605	A1	3601	A2	5600	B2
2601	A1	2606	A1	3602	A1	5601	A1
2602	B1	2607	A1	3604	A1	7600	B2
2603	B1	3600	A2	3605	A1	7601	B1

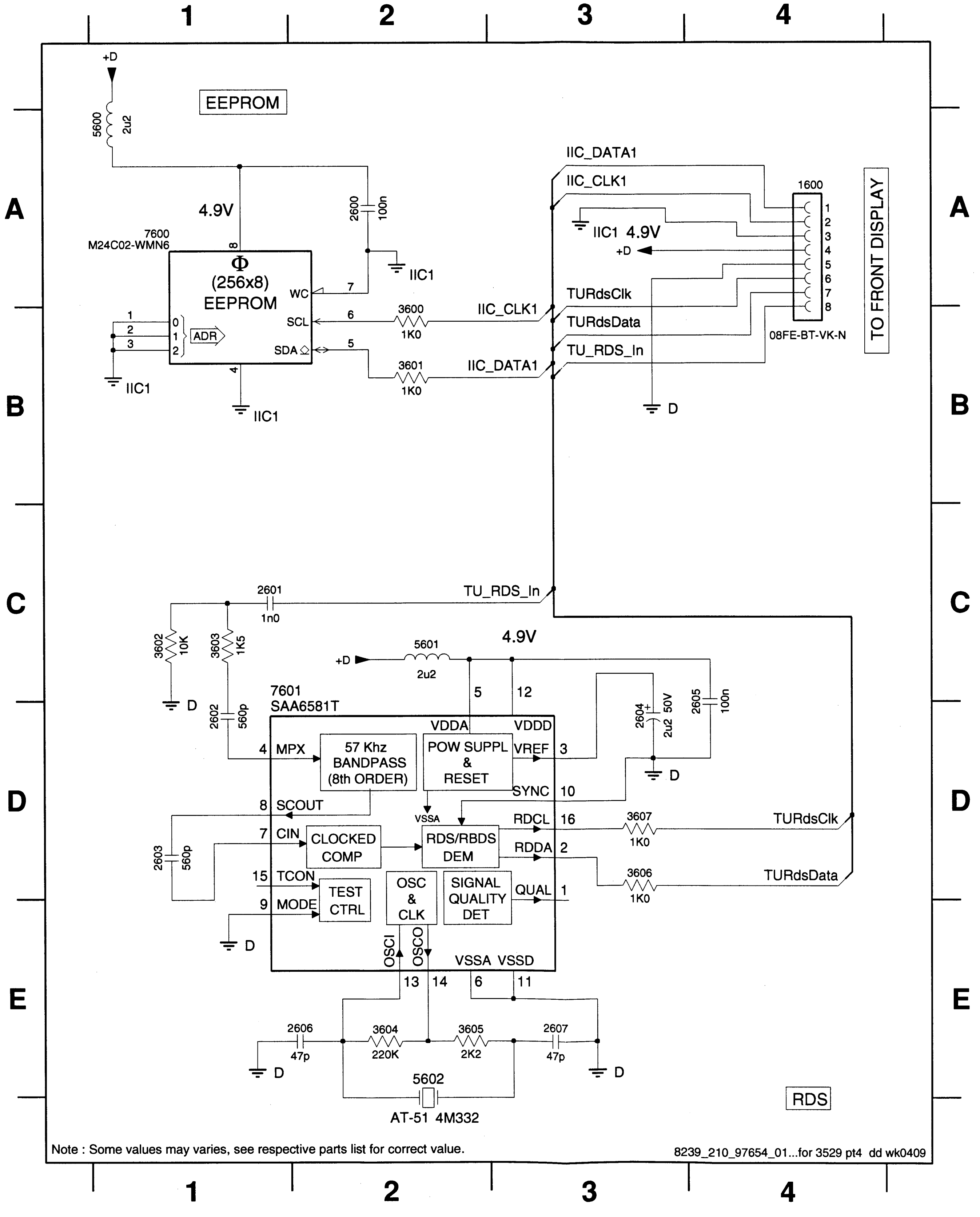

1
2
A
B
97654_01
2601
3602
2607
3605
3604
2606
5601
2605
2600
5600
3600
3601
16
9
7601
1
8
8
5
7600
1
4
2602
2603

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.

3139 113 3529 pt4 dd wk0409

EEPROM BOARD - CIRCUIT DIAGRAM

1600	A4	2601	C1	2603	D1	2605	D4	2607	E3	3601	B2	3603	C1	3605	E2	3607	D3	5601	C2	7600	A1
2600	A2	2602	D1	2604	D3	2606	E2	3600	B2	3602	C1	3604	E2	3606	D3	5600	A1	5602	E2	7601	C1

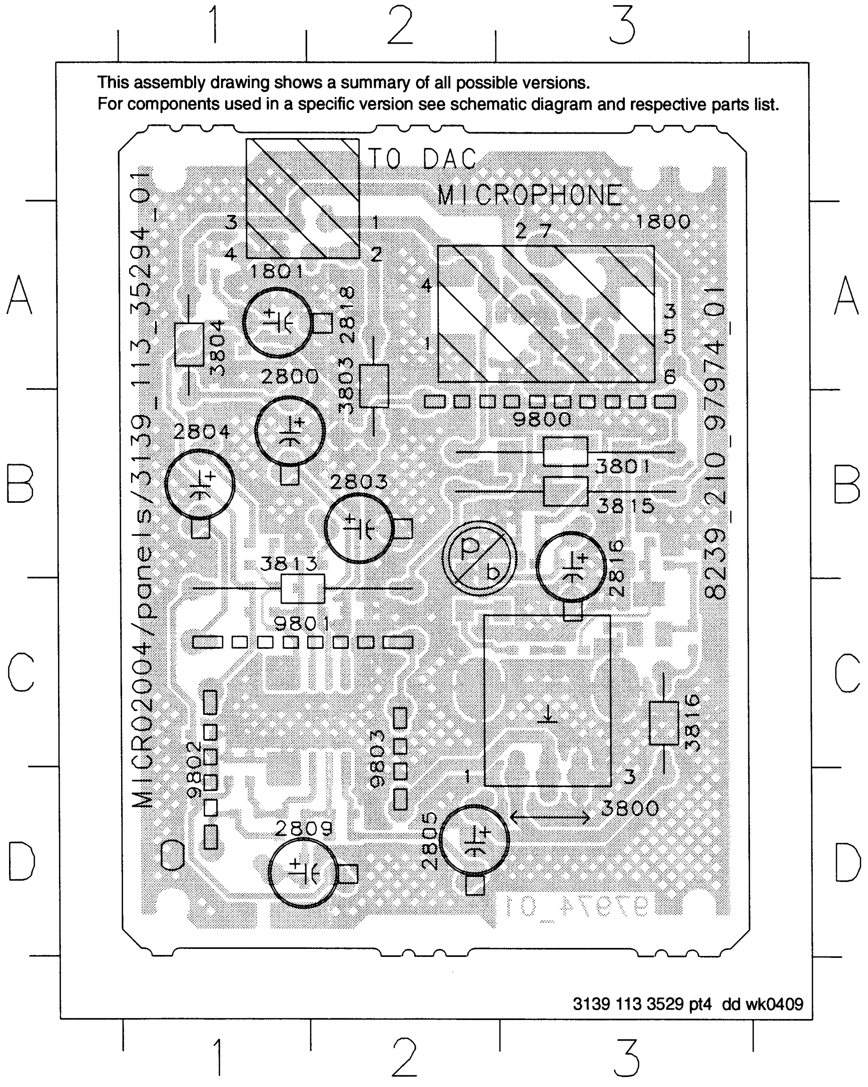

1
2
3
4
A
B
C
D
E
EEPROM
+D
5600
2u2
4.9V
2600
100n
IIC1
7600
M24C02-WMN6
Φ
(256x8)
EEPROM
WC
SCL
SDA
ADR
8
4
7
6
5
1
2
3
3600
1K0
3601
1K0
IIC_CLK1
IIC_DATA1
IIC_DATA1
IIC_CLK1
IIC1 4.9V
TURdsClk
TURdsData
TU_RDS_In
1600
08FE-BT-VK-N
TO FRONT DISPLAY
D
2601
1n0
TU_RDS_In
3602
10K
3603
1K5
5601
2u2
4.9V
7601
SAA6581T
2602
560p
2603
560p
VDDA
VDDD
MPX
57 Khz
BANDPASS
(8th ORDER)
POW SUPPL
&
RESET
VREF
SYNC
SCOUT
CIN
CLOCKED
COMP
RDS/RBDS
DEM
RDCL
RDDA
TCON
TEST
CTRL
MODE
OSC
&
CLK
SIGNAL
QUALITY
DET
QUAL
OSCI
OSCO
VSSA
VSSD
2604
2u2 50V
2605
100n
3607
1K0
3606
1K0
TURdsClk
TURdsData
2606
47p
3604
220K
3605
2K2
2607
47p
5602
AT-51 4M332
RDS

Note : Some values may varies, see respective parts list for correct value.

8239_210_97654_01...for 3529 pt4 dd wk0409

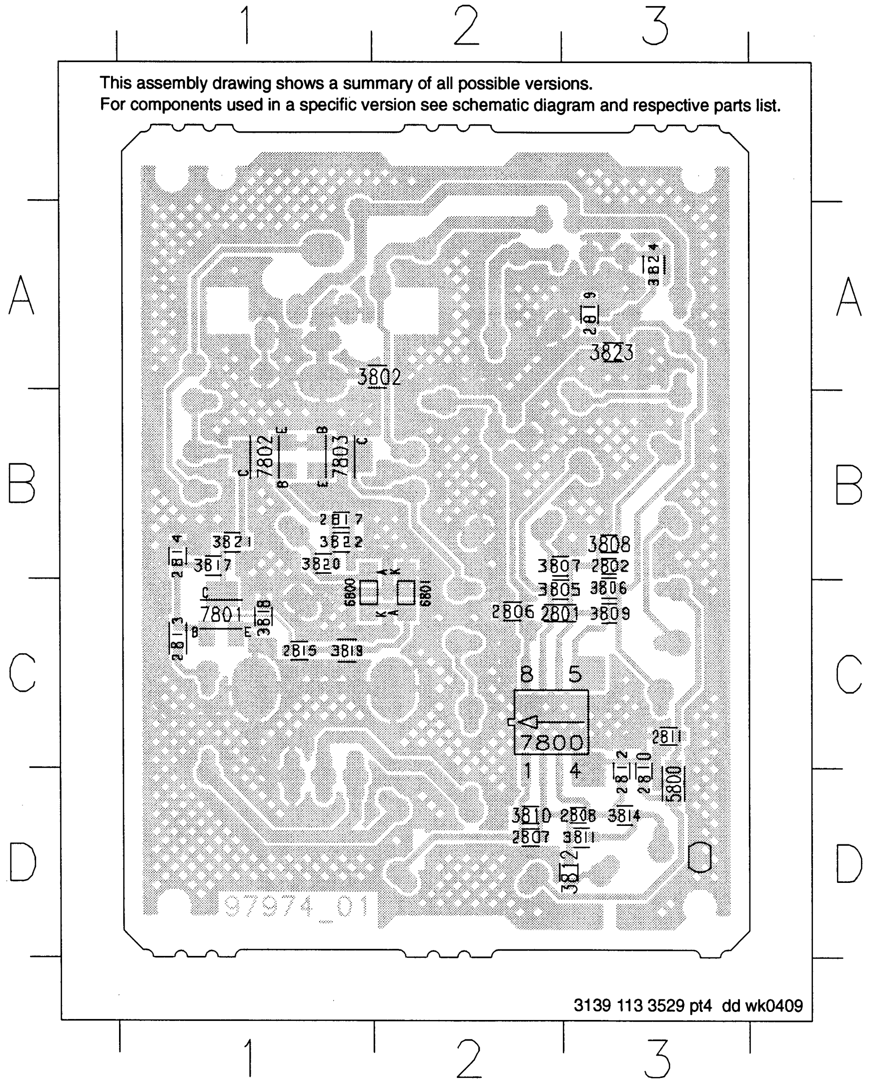
KARAOKE BOARD - COMPONENT LAYOUT (For MCD9 only)

1800	A3	2805	D2	3801	B3	3816	C3
1801	A1	2809	D1	3803	A2	9800	B3
2800	A1	2816	B3	3804	A1	9801	C1
2803	B2	2818	A2	3813	B1	9802	D1
2804	B1	3800	D3	3815	B3	9803	C2


1
2
3
A
B
C
D
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.
TO DAC
MICROPHONE
1800
1801
2800
2804
2803
2818
3803
3804
9800
3801
3815
2816
3813
9801
9802
9803
3816
3800
2809
2805
MICRO2004/panels/3139_113_35294_01
8239_210_97974_01
97974_01
3139 113 3529 pt4 dd wk0409

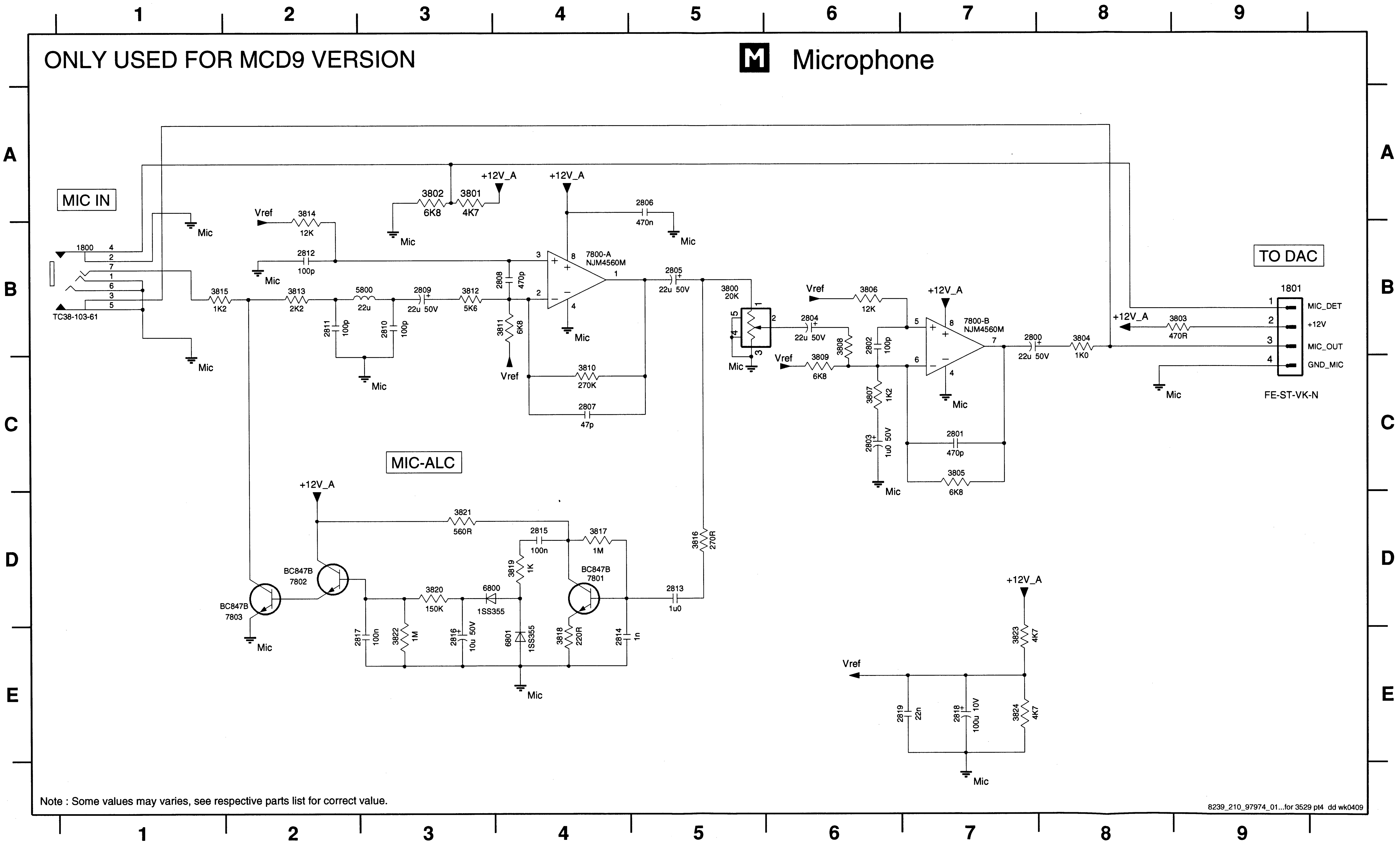
KARAOKE BOARD - CHIP LAYOUT (For MCD9 only)

2801	C2	2815	C1	3811	D3	3824	A3
2802	B3	2817	B1	3812	D3	5800	D3
2806	C2	2819	A3	3814	D3	6800	C1
2807	D2	3802	A2	3817	B1	6801	C2
2808	D3	3805	C2	3818	C1	7800	C2
2810	D3	3806	C3	3819	C1	7801	C1
2811	C3	3807	B2	3820	B1	7802	B1
2812	D3	3808	B3	3821	B1	7803	B1
2813	C1	3809	C3	3822	B1		
2814	B1	3810	D2	3823	A3		


1
2
3
A
B
C
D
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.
3824
2819
3823
3802
7802
7803
2817
3822
3821
3820
3817
2814
7801
3818
2813
2815
3819
6800
6801
3808
3807
2802
3805
3806
2806
2801
3809
7800
2811
2812
2810
5800
3810
2808
3814
2807
3811
3812
97974_01
3139 113 3529 pt4 dd wk0409

KARAOKE BOARD - CIRCUIT DIAGRAM (For MCD9 only)

1800 B1	2801 C7	2804 B6	2807 C4	2810 B3	2813 D5	2816 E3	2819 E6	3802 A3	3805 C7	3808 B6	3811 B4	3814 A2	3817 D4	3820 D3	3823 E7	6800 D3	7800-B B7	7803 D2
1801 B9	2802 B6	2805 B5	2808 B4	2811 B2	2814 E4	2817 E2	3800 B5	3803 B9	3806 B6	3809 C6	3812 B3	3815 B1	3818 E4	3821 D3	3824 E7	6801 E4	7801 D4	
2800 B7	2803 C6	2806 A5	2809 B3	2812 B2	2815 D4	2818 E7	3801 A3	3804 B8	3807 C6	3810 C4	3813 B2	3816 D5	3819 D4	3822 E3	5800 B3	7800-A B4	7802 D2	


1
2
3
4
5
6
7
8
9
A
B
C
D
E
ONLY USED FOR MCD9 VERSION
M
Microphone
MIC IN
1800
TC38-103-61
Mic
Vref
3814
12K
2812
100p
3815
1K2
3813
2K2
5800
22u
2811
100p
2810
100p
2809
22u 50V
3812
5K6
2808
470p
3811
6K8
3802
6K8
3801
4K7
+12V_A
2806
470n
7800-A
NJM4560M
3810
270K
2807
47p
2805
22u 50V
3800
20K
2804
22u 50V
3808
3809
6K8
2802
100p
3806
12K
7800-B
NJM4560M
3807
1K2
2803
1u0 50V
2801
470p
3805
6K8
2800
22u 50V
3804
1K0
3803
470R
TO DAC
1801
MIC_DET
+12V
MIC_OUT
GND_MIC
FE-ST-VK-N
MIC-ALC
3821
560R
2815
100n
3817
1M
3819
1K
BC847B
7802
BC847B
7803
BC847B
7801
3820
150K
6800
1SS355
6801
1SS355
2817
100n
3822
1M
2816
10u 50V
3818
220R
2814
1n
2813
1u0
3816
270R
3823
4K7
3824
4K7
2819
22n
2818
100u 10V
8239_210_97974_01...for 3529 pt4 dd wk0409

Note : Some values may varies, see respective parts list for correct value.

ELECTRICAL PARTS LIST - FRONT BOARD

MISCELLANEOUS

1300	4822 265 11183	Flex Connector 4P
1301	2422 026 05563	Headphone Socket
1302	4822 265 10979	Flex Connector 15P
1303	4822 276 13775	Tact Switch
1304	4822 276 13775	Tact Switch
1305	4822 276 13775	Tact Switch
1306	4822 276 13775	Tact Switch
1307	4822 276 13775	Tact Switch
1308	4822 276 13775	Tact Switch
1309	4822 276 13775	Tact Switch
1310	4822 276 13775	Tact Switch
1311	4822 276 13775	Tact Switch
1312	2422 129 16708	Rotary Encoder 24P
1313	2422 129 00039	Rotary Encoder 24P
1314	2422 129 00039	Rotary Encoder 24P
1331	4822 276 13775	Tact Switch
1332	4822 276 13775	Tact Switch
1333	4822 276 13775	Tact Switch
1334	4822 276 13775	Tact Switch
1400	3139 110 53601	FTD HNA-13SM42
1401	4822 265 11545	Flex Connector 19P
1402	4822 265 11531	Flex Connector 9P
1405	4822 265 10979	Flex Connector 15P
1406	4822 265 11535	Flex Connector 8P
1407	4822 267 10956	Flex Connector 7P
1600	4822 265 11515	Flex Connector 8P

CAPACITORS

2300	2238 586 59812	100nF +80/-20% 50V	
2301	2238 916 15641	22nF 10% 25V	
2302	2238 916 15641	22nF 10% 25V	
2303	9965 000 14169	100uF 10V 20%	
2305	5322 126 11583	10nF 10% 50V	
2306	5322 126 11583	10nF 10% 50V	
2307	5322 126 11583	10nF 10% 50V	
2308	5322 126 11583	10nF 10% 50V	
2309	5322 126 11583	10nF 10% 50V	
2310	5322 126 11583	10nF 10% 50V	
2311	2238 586 59812	100nF +80/-20% 50V	
2312	2238 586 59812	100nF +80/-20% 50V	
2313	4822 126 11785	47pF 5% 50V	
2314	4822 126 11785	47pF 5% 50V	
2315	4822 126 11785	47pF 5% 50V	
2401	3198 017 44740	470nF 10V	
2402	5322 126 11583	10nF 10% 50V	
2403	5322 126 11583	10nF 10% 50V	
2404	3198 028 52290	22uF 20% 50V	
2405	3198 028 52290	22uF 20% 50V	
2407	2222 867 15339	33pF 5% 50V	
2408	4822 122 33761	22pF 5% 50V	
2409	4822 126 14223	2,2pF 50V	
2410	4822 122 33761	22pF 5% 50V	
2411	4822 122 33761	22pF 5% 50V	
2412	2020 552 94427	100pF 5% 50V	
2413	2020 552 94427	100pF 5% 50V	
2414	2020 552 94427	100pF 5% 50V	
2417	2020 552 94427	100pF 5% 50V	
2418	2020 552 94427	100pF 5% 50V	
2419	2020 552 94427	100pF 5% 50V	
2420	2020 552 94427	100pF 5% 50V	
2444	2238 586 59812	100nF +80/-20% 50V	
2450	4822 124 81286	47uF 20% 16V	
2451	2238 586 59812	100nF +80/-20% 50V	
2453	4822 124 81286	47uF 20% 16V	
2457	4822 124 81286	47uF 20% 16V	
2460	2020 552 94427	100pF 5% 50V	
2461	4822 124 12032	4,7uF 20% 50V	
2462	4822 124 12032	4,7uF 20% 50V	
2463	4822 124 12032	4,7uF 20% 50V	
2464	4822 124 12032	4,7uF 20% 50V	
2473	4822 124 12032	4,7uF 20% 50V	
2474	4822 126 14238	2,2nF 50V	
2480	2020 552 94427	100pF 5% 50V	
2600	2238 586 59812	100nF +80/-20% 50V	
2601	5322 126 11578	1nF 10% 50V	/22/25
2602	4822 126 14249	560pF 10% 50V	/22/25
2603	4822 126 14249	560pF 10% 50V	/22/25
2604	4822 124 22652	2,2uF 20% 50V	/22/25
2605	2238 586 59812	100nF +80/-20% 50V	/22/25
2606	4822 126 11785	47pF 5% 50V	/22/25
2607	4822 126 11785	47pF 5% 50V	/22/25

RESISTORS

3301	4822 051 30151	150R 5% 0,062W	
3302	4822 051 30221	220R 5% 0,062W	
3303	4822 051 30271	270R 5% 0,062W	
3304	4822 051 30391	390R 5% 0,062W	
3305	4822 051 30561	560R 5% 0,062W	
3306	4822 117 12968	820R 5% 0,62W	
3307	4822 117 11817	1k2 1% 1/16W	
3308	4822 117 12903	1k8 1% 0,063W	
3312	4822 051 30103	10k 5% 0,062W	
3313	4822 051 30103	10k 5% 0,062W	
3314	4822 051 30103	10k 5% 0,062W	
3315	4822 051 30103	10k 5% 0,062W	
3316	4822 051 30103	10k 5% 0,062W	
3317	4822 051 30103	10k 5% 0,062W	
3318	4822 051 30103	10k 5% 0,062W	
3319	4822 051 30103	10k 5% 0,062W	
3320	4822 051 30103	10k 5% 0,062W	
3321	4822 051 30103	10k 5% 0,062W	
3323	4822 051 30152	1k5 5% 0,062W	

3324	4822 051 30152	1k5 5% 0,062W	
3325	4822 051 30152	1k5 5% 0,062W	
3326	4822 051 30152	1k5 5% 0,062W	
3327	4822 051 30152	1k5 5% 0,062W	
3328	4822 051 30152	1k5 5% 0,062W	
3329	4822 051 30152	1k5 5% 0,062W	
3330	4822 051 30152	1k5 5% 0,062W	
3331	4822 051 30391	390R 5% 0,062W	
3332	4822 051 30391	390R 5% 0,062W	
3333	4822 051 30391	390R 5% 0,062W	
3334	4822 051 30391	390R 5% 0,062W	
3335	4822 051 30103	10k 5% 0,062W	
3336	4822 051 30103	10k 5% 0,062W	
3350	4822 051 30151	150R 5% 0,062W	
3351	4822 051 30221	220R 5% 0,062W	
3352	4822 051 30271	270R 5% 0,062W	
3400	4822 117 12968	820R 5% 0,62W	
3401	4822 117 12925	47k 1% 0,063W	
3403	4822 117 13632	100k 1% 0,62W	
3404	4822 051 30684	680k 5% 0,062W	
3405	4822 051 30102	1k 5% 0,062W	
3406	4822 117 12891	220k 1%	
3407	4822 051 30102	1k 5% 0,062W	
3408	4822 051 30102	1k 5% 0,062W	
3409	4822 051 30102	1k 5% 0,062W	
3410	4822 051 30102	1k 5% 0,062W	
3411	4822 051 30102	1k 5% 0,062W	
3412	4822 051 30102	1k 5% 0,062W	
3413	4822 051 30103	10k 5% 0,062W	
3414	4822 051 30103	10k 5% 0,062W	
3415	4822 051 30102	1k 5% 0,062W	
3416	4822 051 30102	1k 5% 0,062W	
3417	4822 051 30102	1k 5% 0,062W	
3418	4822 051 30102	1k 5% 0,062W	
3419	4822 051 30102	1k 5% 0,062W	
3420	4822 050 21003	10k 1% 0,6W	
3421	4822 051 30103	10k 5% 0,062W	
3422	4822 051 30102	1k 5% 0,062W	
3423	4822 051 30102	1k 5% 0,062W	
3424	4822 051 30102	1k 5% 0,062W	
3425	4822 051 30102	1k 5% 0,062W	
3426	4822 051 30102	1k 5% 0,062W	
3427	4822 051 30102	1k 5% 0,062W	
3428	4822 051 30102	1k 5% 0,062W	
3431	4822 051 30102	1k 5% 0,062W	
3432	4822 051 30472	4k7 5% 0,062W	
3433	4822 116 52263	2k7 5% 0,5W	
3434	4822 116 52213	180R 5% 0,5W	
3435	4822 051 30102	1k 5% 0,062W	/22/25
3436	4822 051 30105	1M 5% 0,062W	
3437	4822 051 30684	680k 5% 0,062W	
3438	4822 051 30105	1M 5% 0,062W	
3439	4822 051 30102	1k 5% 0,062W	
3440	4822 051 30102	1k 5% 0,062W	
3441	4822 051 30102	1k 5% 0,062W	
3442	4822 051 30101	100R 5% 0,062W	
3443	4822 051 30101	100R 5% 0,062W	
3444	4822 051 30102	1k 5% 0,062W	
3445	4822 051 30102	1k 5% 0,062W	
3446	4822 051 30471	470R 5% 0,062W	
3447	4822 051 30471	470R 5% 0,062W	
3448	4822 051 30471	470R 5% 0,062W	
3452	4822 051 30471	470R 5% 0,062W	
3453	4822 051 30102	1k 5% 0,062W	
3454	4822 051 30102	1k 5% 0,062W	
3455	4822 051 30102	1k 5% 0,062W	
3456	4822 051 30102	1k 5% 0,062W	
3457	4822 051 30102	1k 5% 0,062W	
3458	4822 051 30102	1k 5% 0,062W	
3459	4822 051 30102	1k 5% 0,062W	
3460	4822 051 30102	1k 5% 0,062W	
3461	4822 051 30102	1k 5% 0,062W	
3462	4822 051 30102	1k 5% 0,062W	
3463	4822 051 30471	470R 5% 0,062W	
3464	4822 051 30471	470R 5% 0,062W	
3465	4822 051 30272	2k7 5% 0,062W	
3466	4822 051 30102	1k 5% 0,062W	
3467	4822 051 30102	1k 5% 0,062W	
3468	4822 051 30102	1k 5% 0,062W	
3469	4822 051 30102	1k 5% 0,062W	
3470	4822 051 30102	1k 5% 0,062W	
3471	4822 051 30102	1k 5% 0,062W	
3472	4822 051 30102	1k 5% 0,062W	
3473	4822 051 30102	1k 5% 0,062W	
3474	4822 051 30102	1k 5% 0,062W	
3475	4822 051 30102	1k 5% 0,062W	
3476	4822 051 30102	1k 5% 0,062W	
3477	4822 051 30102	1k 5% 0,062W	
3478	4822 051 30102	1k 5% 0,062W	
3479	4822 051 30102	1k 5% 0,062W	
3480	4822 051 30102	1k 5% 0,062W	
3481	4822 051 30102	1k 5% 0,062W	
3482	4822 051 30102	1k 5% 0,062W	
3483	4822 051 30102	1k 5% 0,062W	
3484	4822 051 30102	1k 5% 0,062W	
3485	4822 051 30102	1k 5% 0,062W	
3486	4822 051 30102	1k 5% 0,062W	
3487	4822 051 30102	1k 5% 0,062W	
3488	4822 051 30102	1k 5% 0,062W	
3489	4822 051 30102	1k 5% 0,062W	
3490	4822 117 12864	82k 5% 0,6W	
3491	4822 051 30103	10k 5% 0,062W	/37

ELECTRICAL PARTS LIST - FRONT BOARD

RESISTORS

3492	4822 117 12864	82k 5% 0,6W	
3493	4822 117 12864	82k 5% 0,6W	
3494	4822 051 30682	6k8 5% 0,062W	
3495	4822 051 30682	6k8 5% 0,062W	
3496	4822 051 30103	10k 5% 0,062W	/37
3497	4822 050 21003	10k 1% 0,6W	/37
3498	4822 051 30101	100R 5% 0,062W	
3499	4822 051 30101	100R 5% 0,062W	
3500	4822 051 30221	220R 5% 0,062W	
3501	4822 051 30221	220R 5% 0,062W	
3502	4822 051 30471	470R 5% 0,062W	
3508	4822 051 30393	39k 5% 0,062W	
3509	4822 051 30103	10k 5% 0,062W	
3510	4822 051 30103	10k 5% 0,062W	
3511	4822 051 30103	10k 5% 0,062W	
3513	4822 051 30102	1k 5% 0,062W	
3514	4822 051 30102	1k 5% 0,062W	
3515	4822 051 30102	1k 5% 0,062W	
3518	4822 116 83872	220R 5% 0,5W	
3519	4822 116 81154	2R2 5% 0,5W	
3520	4822 116 81154	2R2 5% 0,5W	
3521	4822 116 52257	22k 5% 0,5W	
3522	4822 116 83872	220R 5% 0,5W	
3523	4822 116 81154	2R2 5% 0,5W	
3524	4822 116 81154	2R2 5% 0,5W	
3527	4822 051 30101	100R 5% 0,062W	
3529	4822 051 30101	100R 5% 0,062W	
3531	4822 051 30101	100R 5% 0,062W	
3532	4822 051 30101	100R 5% 0,062W	
3533	4822 051 30103	10k 5% 0,062W	
3534	4822 051 30102	1k 5% 0,062W	
3535	4822 116 52263	2k7 5% 0,5W	
3600	4822 051 30102	1k 5% 0,062W	
3601	4822 051 30102	1k 5% 0,062W	
3602	4822 051 30103	10k 5% 0,062W	/22/25
3603	4822 116 52243	1k5 5% 0,5W	/22/25
3604	4822 117 12891	220k 1%	/22/25
3605	4822 051 30222	2k2 5% 0,062W	/22/25
3606	4822 050 11002	1k 1% 0,4W	/22/25
3607	4822 050 11002	1k 1% 0,4W	/22/25
4300	4822 051 30008	0R Jumper 0603	
4301	4822 051 30008	0R Jumper 0603	
4302	4822 051 30008	0R Jumper 0603	
4303	4822 051 30008	0R Jumper 0603	
4310	4822 051 30008	0R Jumper 0603	
4311	4822 051 30008	0R Jumper 0603	
4312	4822 051 30008	0R Jumper 0603	
4313	4822 051 30008	0R Jumper 0603	
4314	4822 051 30008	0R Jumper 0603	
4315	4822 051 30008	0R Jumper 0603	
4316	4822 051 30008	0R Jumper 0603	
4404	4822 051 30008	0R Jumper 0603	
4405	4822 051 30008	0R Jumper 0603	
4406	4822 051 30008	0R Jumper 0603	
4407	4822 051 30008	0R Jumper 0603	
4409	4822 051 30008	0R Jumper 0603	
4411	4822 051 30008	0R Jumper 0603	
4420	4822 051 30008	0R Jumper 0603	
4421	4822 051 30008	0R Jumper 0603	
4423	4822 051 30008	0R Jumper 0603	
4424	4822 051 30008	0R Jumper 0603	
4426	4822 051 30008	0R Jumper 0603	
4427	4822 051 30008	0R Jumper 0603	
4430	4822 051 30008	0R Jumper 0603	
4431	4822 051 30008	0R Jumper 0603	
4432	4822 051 30008	0R Jumper 0603	
4433	4822 051 30008	0R Jumper 0603	
4434	4822 051 30008	0R Jumper 0603	
4436	4822 051 30008	0R Jumper 0603	
4437	4822 051 30008	0R Jumper 0603	
4438	4822 051 30008	0R Jumper 0603	/22/25
4439	4822 051 30008	0R Jumper 0603	
4440	4822 051 30008	0R Jumper 0603	
4441	4822 051 30008	0R Jumper 0603	
4442	4822 051 30008	0R Jumper 0603	
4443	4822 051 30008	0R Jumper 0603	
4444	4822 051 30008	0R Jumper 0603	
4445	4822 051 30008	0R Jumper 0603	
4446	4822 051 30008	0R Jumper 0603	
4447	4822 051 30008	0R Jumper 0603	
4448	4822 051 30008	0R Jumper 0603	
4449	4822 051 30008	0R Jumper 0603	
4450	4822 051 30008	0R Jumper 0603	
4451	4822 051 30008	0R Jumper 0603	
4452	4822 051 30008	0R Jumper 0603	
4453	4822 051 30008	0R Jumper 0603	
4454	4822 051 30008	0R Jumper 0603	
4455	4822 051 30008	0R Jumper 0603	
4456	4822 051 30008	0R Jumper 0603	
4457	4822 051 30008	0R Jumper 0603	/22/25
4458	4822 051 30008	0R Jumper 0603	

COILS & FILTERS

5300	3198 018 52280	FXDIND SM 0603 2U2 10%	
5301	3198 018 52280	FXDIND SM 0603 2U2 10%	
5302	3198 018 52280	FXDIND SM 0603 2U2 10%	
5303	3198 018 54780	FXDIND SM 0603 4U7 10%	
5304	3198 018 54780	FXDIND SM 0603 4U7 10%	
5400	5322 242 73686	RES CER 12MHz	
5401	2422 543 01069	RES XTL 32,768kHz	
5402	3198 018 54780	FXDIND SM 0603 4U7 10%	
5403	3198 018 54780	FXDIND SM 0603 4U7 10%	

ELECTRICAL PARTS LIST - FRONT BOARD

5404	4822 157 62552	Coil 2,2uH 5%	
5405	4822 157 62552	Coil 2,2uH 5%	
5406	4822 157 62552	Coil 2,2uH 5%	
5407	4822 157 62552	Coil 2,2uH 5%	
5600	3198 018 52280	FXDIND SM 0603 2U2 10%	
5601	3198 018 52280	FXDIND SM 0603 2U2 10%	/22/25
5602	4822 242 11033	RES XTL 4,332MHz	/22/25

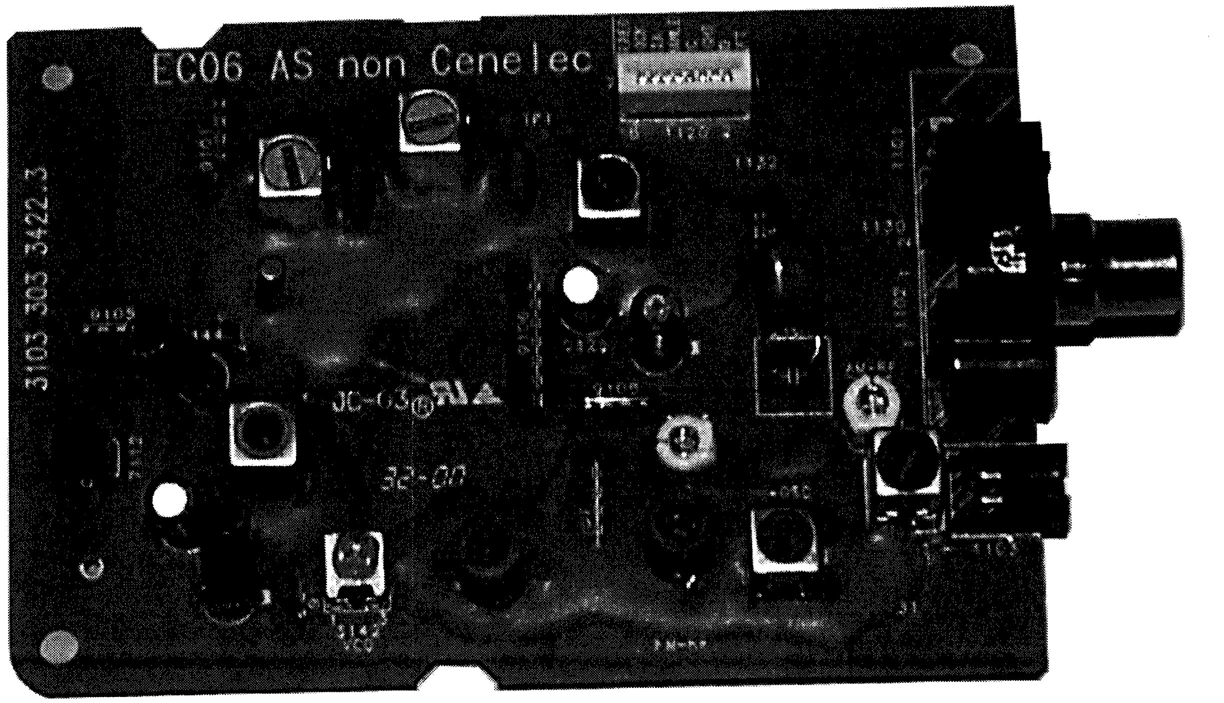
DIODES

6300	9322 190 55676	LED VS LTL-816TDK3	
6301	9322 190 55676	LED VS LTL-816TDK3	
6302	9322 190 55676	LED VS LTL-816TDK3	
6303	9322 190 55676	LED VS LTL-816TDK3	
6304	9322 190 55676	LED VS LTL-816TDK3	
6305	9322 190 55676	LED VS LTL-816TDK3	
6306	9322 179 76676	LED VS LTL-816EELC	
6308	4822 130 31878	1N4003G	
6309	4822 130 11397	BAS316	
6400	4822 130 30621	1N4148	
6401	4822 130 30621	1N4148	
6402	4822 130 30621	1N4148	
6403	4822 130 30621	1N4148	
6404	4822 130 30621	1N4148	
6405	4822 130 31878	1N4003G	
6406	4822 130 31878	1N4003G	
6407	4822 130 31878	1N4003G	
6408	4822 130 30621	1N4148	
6409	4822 130 34278	BZX79-B6V8	
6410	4822 130 30621	1N4148	

TRANSISTORS & INTEGRATED CIRCUITS

7301	4822 209 15449	IC SM 74HC4094D	
7302	5322 130 60159	BC847B	
7400	3139 110 53741	TMP88CU74YF - 'MCM7/8S53741'	
7401	4822 130 60373	BC857B	
7402	5322 130 60159	BC847B	
7403	9322 185 95667	IR Receiver TSOP4836ZC1	
7404	5322 130 60159	BC847B	
7405	5322 130 60159	BC847B	
7407	5322 130 60159	BC847B	
7408	5322 130 60159	BC847B	
7600	9322 145 26668	IC SM M24C02-WMN6	
7601	9352 686 05118	IC SM SAA6581T	/22/25

Note : Only the parts mentioned in this list are normal service spare parts.


EC06 AS non Cenelec
3103 303 3422.3

ECO6 Tuner Board

version: ***SYSTEMS non-CENELEC***

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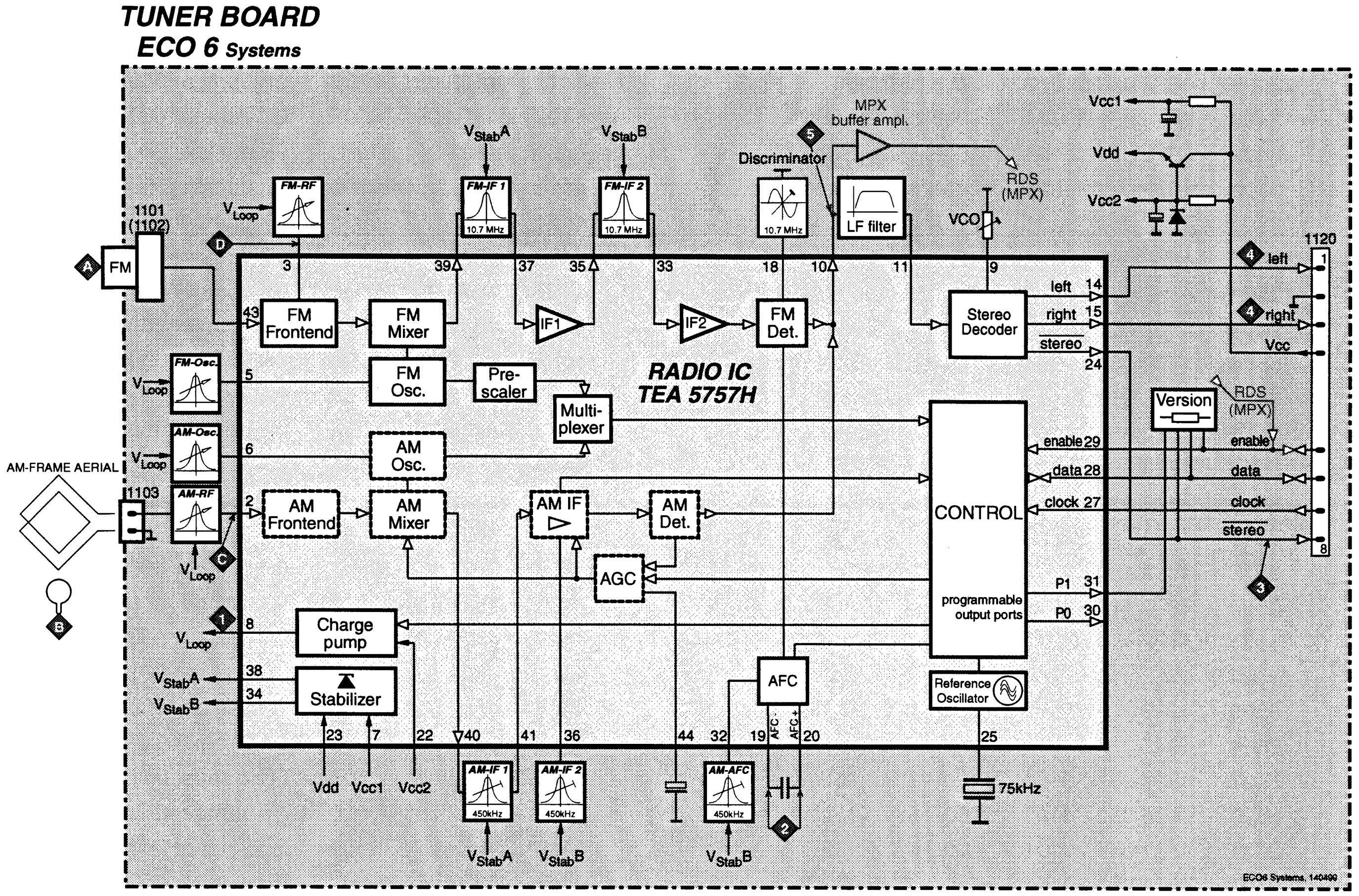
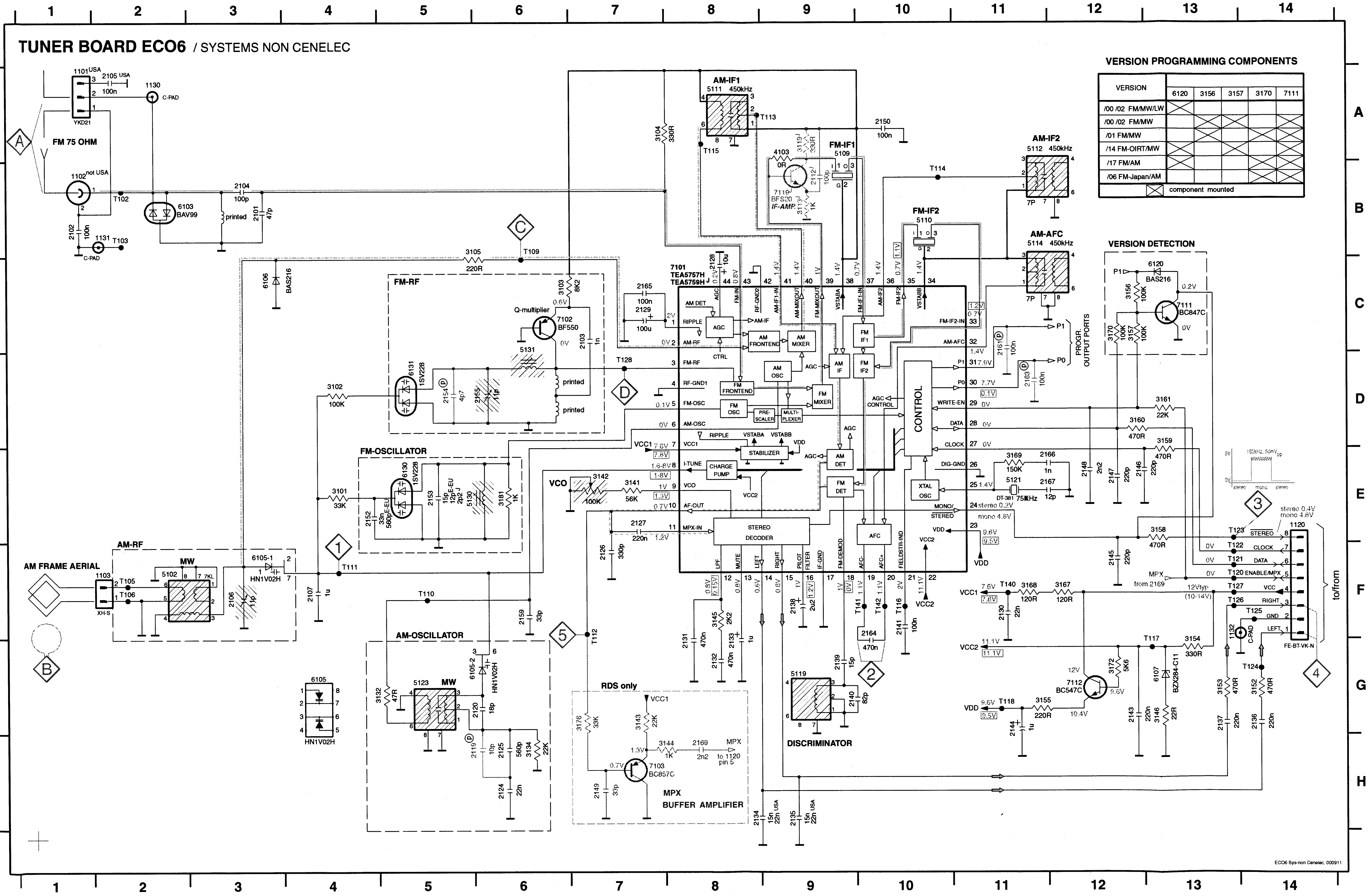
BLOCK DIAGRAM


TUNER BOARD
ECO 6 Systems
RADIO IC
TEA 5757H
FM
1101 (1102)
A
D
B
C
1
2
3
4 left
4 right
5
FM-RF
VLoop
FM-IF 1 10.7 MHz
FM-IF 2 10.7 MHz
VStabA
VStabB
Discriminator 10.7 MHz
MPX buffer ampl.
RDS (MPX)
LF filter
VCO
FM Frontend
FM Mixer
IF1
IF2
FM Det.
FM Osc.
Pre-scaler
Multi-plexer
FM-Osc.
AM-Osc.
AM-RF
AM-FRAME AERIAL
1103
AM Osc.
AM Frontend
AM Mixer
AM IF
AM Det.
AGC
Charge pump
Stabilizer
AFC
AFC -
AFC +
Stereo Decoder
CONTROL
programmable output ports
Reference Oscillator
Version
left
right
stereo
enable
data
clock
P1
P0
Vcc1
Vdd
Vcc2
Vcc
1120
Vdd Vcc1 Vcc2
AM-IF 1 450kHz
AM-IF 2 450kHz
AM-AFC 450kHz
75kHz
3 39 37 35 33 18 10 11 9 43 5 6 2 8 38 34 23 7 22 40 41 36 44 32 19 20 25 14 15 24 29 28 27 31 30 1 8
ECO6 Systems, 140499

TUNER BOARD ECO6 / SYSTEMS NON CENELEC


AM-IF1
5111 450kHz
FM-IF1
5109
FM-IF2
5110
AM-IF2
5112 450kHz
AM-AFC
5114 450kHz
VERSION DETECTION
FM 75 OHM
FM-RF
Q-multiplier
7102 BF550
FM-OSCILLATOR
AM-RF
AM FRAME AERIAL
AM-OSCILLATOR
MW
7101
TEA5757H
TEA5759H
AGC
AM FRONTEND
AM MIXER
AM OSC
FM FRONTEND
FM OSC
PRE-SCALER
MULTI-PLEXER
FM MIXER
FM IF1
FM IF2
AM IF
AM DET
FM DET
STABILIZER
CHARGE PUMP
STEREO DECODER
AFC
CONTROL
XTAL OSC
VCO
RDS only
MPX BUFFER AMPLIFIER
7103 BC857C
DISCRIMINATOR
5119
7111 BC847C
7112 BC547C
PROGR. OUTPUT PORTS
P1
P0
to/from
1120
FE-BT-VK-N
STEREO
CLOCK
DATA
ENABLE/MPX
VCC
RIGHT
GND
LEFT
VCC1
VCC2
VDD
stereo 0.4V
mono 4.8V
ECO6 Sys-non Cenelec, 000911

VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒
/06 FM-Japan/AM				☒	☒

☒ component mounted

LEGEND

Ⓟ...for provision only
USA ... for USA version only
E-EU ... for East European version only
J ... for Japanese version only

EVM
...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while set is tuned to a strong transmitter

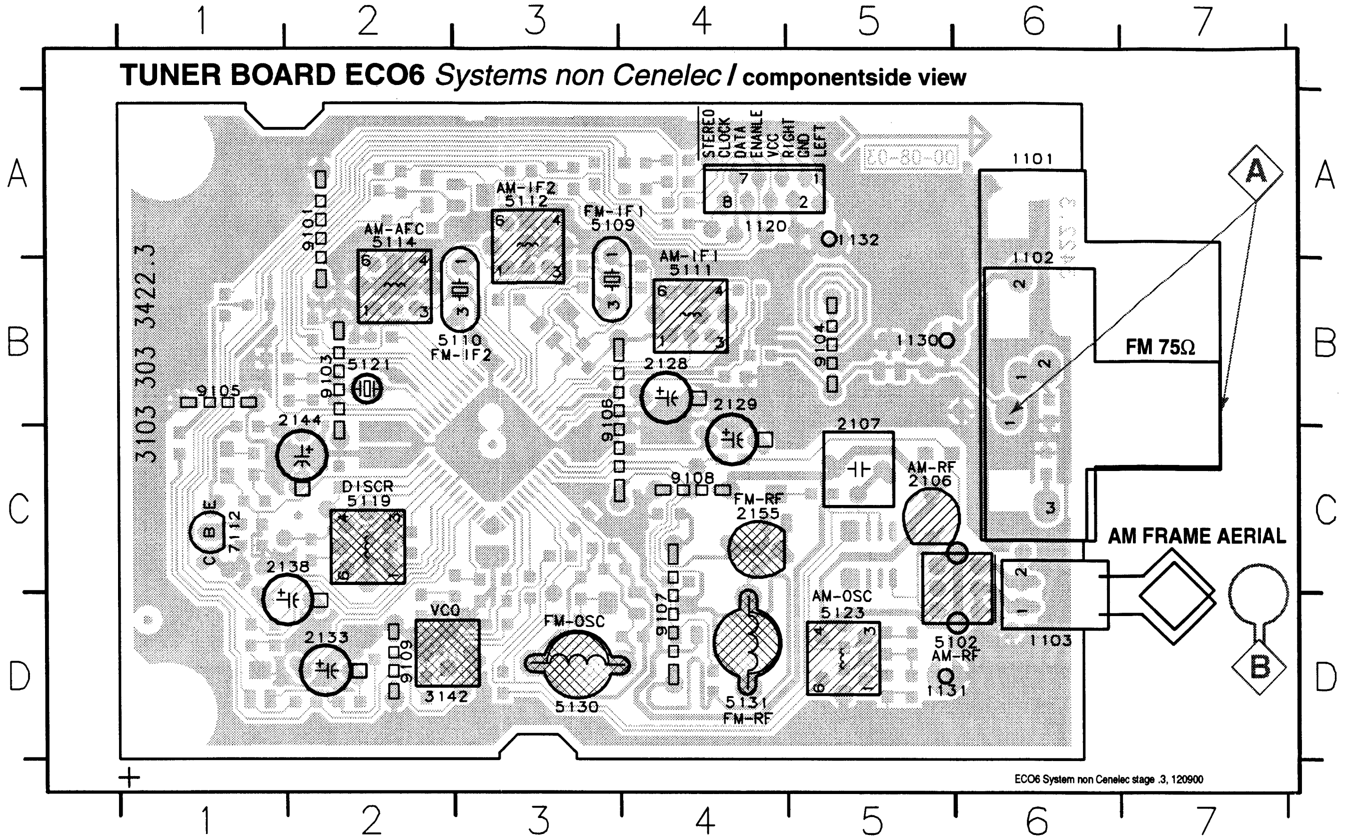
Signal path

- FM
- AM
- MPX (Audio Frequency)
- ⇨ AF - left/right

1101	A1
1102	B1
1103	F2
1120	E14
1130	A2
1131	B2
1132	G13
2101	B3
2102	B1
2103	C7
2104	B3
2105	A2
2106	F3
2107	F4
2119	H6
2120	G6
2124	H6
2125	H6
2126	F7
2127	E7
2128	C8
2129	C7
2130	F11
2131	G8
2132	G8
2133	G8
2134	H8
2135	H9
2136	G14
2137	G13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	F12
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2152	E4
2153	E5
2154	D5
2155	D5
2159	F6
2161	C11
2163	D11
2164	F10
2165	C7
2166	E11
2167	E11
2169	H8
3101	E4
3102	D4
3103	C6
3104	A7
3105	B6
3132	G5
3134	H6
3141	E7
3142	E7
3143	G7
3144	H7
3145	F8
3146	G13
3152	G14
3153	G13
3154	G13
3155	G11
3156	C12
3157	C12
3158	E13
3159	D13
3160	D12
3161	D13
3167	F12
3168	F11
3169	E11
3170	C12
3172	G12
3176	G7
3181	E6
5102	F2
5109	B9
5110	B10
5111	A8
5112	A11
5114	B11
5119	G9
5121	E11
5123	G5
5130	E5
5131	C6
6103	B2
6105-1	F3
6105-2	G5
6106	C3
6107	G13
6120	C13
6130	E5
6131	D5
7101	C8
7102	C6
7103	H7
7111	C13
7112	G12
T102	B2
T103	B2
T105	F2
T106	F2
T109	B6
T110	F5
T111	F4
T112	F7
T113	A8
T114	B10
T115	A8
T116	F10
T117	G13
T118	G11
T120	F13
T121	F13
T122	F13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T128	D7
T140	F11
T141	F10
T142	F10

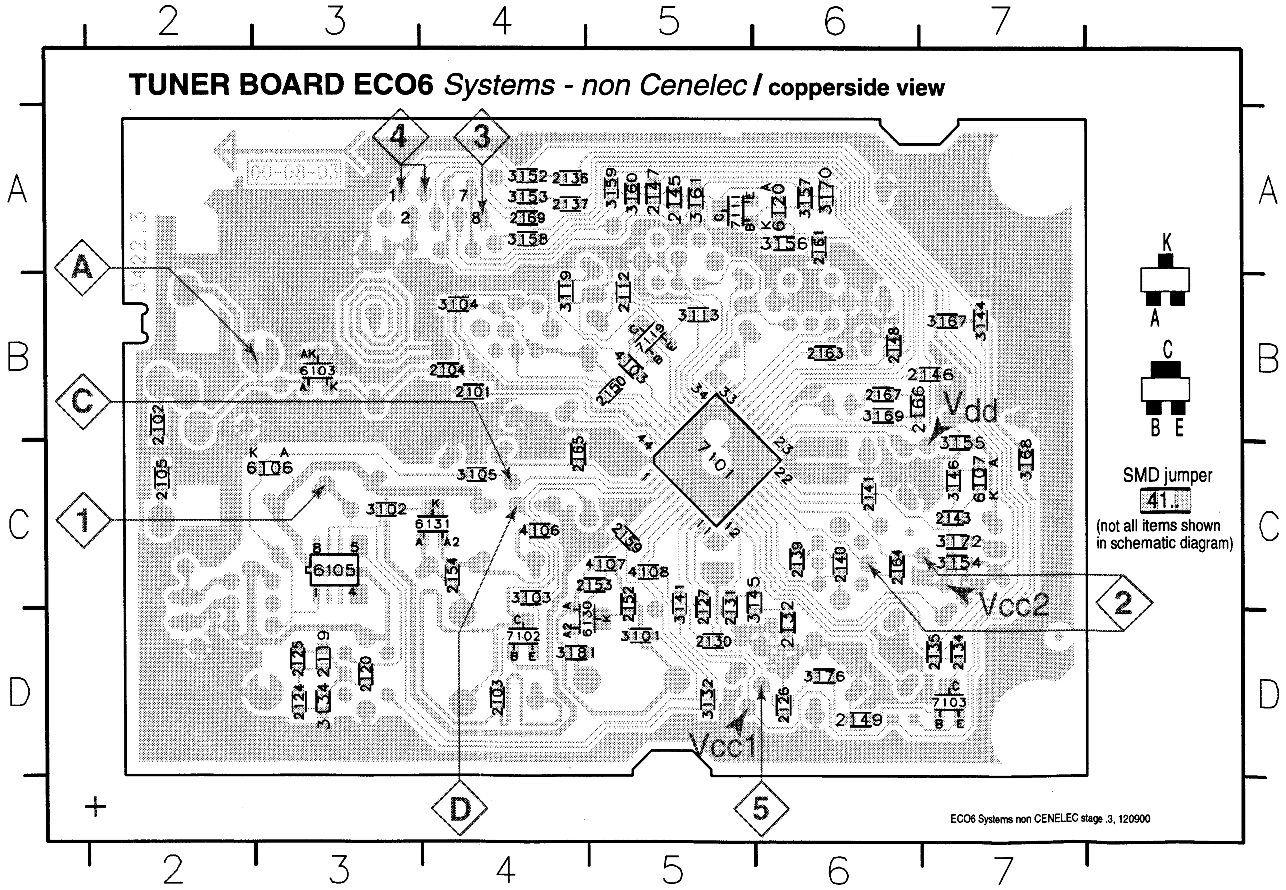
1101	A6	1120	A4	1132	A5	2128	C4	2138	C2	3142	D2	5110	B3	5114	A2	5123	D5	7112	C1	9104	B5	9107	D4		
1102	B6	1130	B5	2106	C5	2129	B4	2144	B2	5102	D6	5111	B4	5119	C2	5130	D3	9101	A2	9105	B1	9108	C4		
1103	D6	1131	D5	2107	B5	2133	D2	2155	C4	5109	A3	5112	A3	5121	B2	5131	D4	9103	B2	9106	B3	9109	D2		

TUNER BOARD ECO6 *Systems non Cenelec* / componentside view


1
2
3
4
5
6
7
A
B
C
D
STEREO
CLOCK
DATA
ENABLE
VCC
RIGHT
GND
LEFT
1101
1102
1103
1120
1130
1131
1132
AM-IF2
5112
FM-IF1
5109
AM-AFC
5114
AM-IF1
5111
5110
FM-IF2
5121
9101
9103
9104
9105
9106
9107
9108
9109
2128
2129
2107
2144
AM-RF
2106
FM-RF
2155
DISCR
5119
7112
2138
2133
VCO
3142
FM-OSC
5130
5131
FM-RF
AM-OSC
5123
5102
AM-RF
3103 303 3422.3
FM 75Ω
AM FRAME AERIAL
A
B
ECO6 System non Cenelec stage .3, 120900

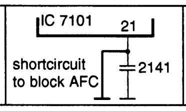
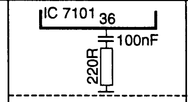
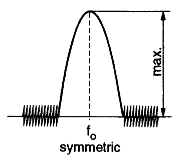
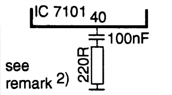
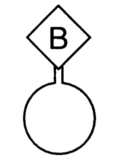
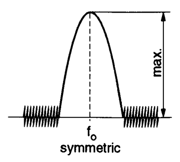
2101	B4	2119	D3	2130	D5	2137	A4	2146	B7	2153	C5	2165	C4	3103	C4	3134	D3	3152	A4	3158	A4	3169	B6	4106	C4	6107	C7	7103	D7
2102	B1	2120	D3	2131	C5	2139	C6	2147	A5	2154	C4	2166	B6	3104	B4	3141	C5	3153	A4	3159	A5	3170	A6	4107	C5	6120	A6	7111	A5
2103	D4	2124	D3	2132	D6	2140	C6	2148	B6	2159	C5	2167	B6	3105	C4	3143	D6	3154	C7	3160	A5	3172	C7	4108	C5	6130	D4	7119	B5
2104	B4	2125	D3	2134	D7	2141	C6	2149	D6	2161	A6	2169	A4	3113	B5	3144	B7	3155	C7	3161	A5	3176	D6	6103	B3	6131	C4		
2105	C1	2126	D6	2135	D7	2143	C7	2150	B5	2163	B6	3101	D5	3119	B5	3145	C5	3156	A6	3167	B7	3181	D4	6105	C3	7101	C5		
2112	B5	2127	C5	2136	A4	2145	A5	2152	C5	2164	C6	3102	C3	3132	D5	3146	C7	3157	A6	3168	C7	4103	B5	6106	C3	7102	D4		

TUNER BOARD ECO6 *Systems - non Cenelec* / copperside view


2
3
4
5
6
7
A
B
C
D
4
3
A
C
1
2
D
5
Vdd
Vcc1
Vcc2
7101
6103
6106
6105
6131
7102
7103
K
A
C
B E
SMD jumper
41↓
(not all items shown in schematic diagram)
ECO6 Systems non CENELEC stage .3, 120900

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (ECO6 FM/MW- and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)			108MHz	5130	1	8V ±0.2V
			87.5MHz (65.81MHz)	check		4.3V ±0.5V (1.2V ±0.5V)
MW FM/AM-version, 10kHz grid 530 - 1700kHz			1700kHz	5123		8V ±0.2V
			530kHz	check		1.1V ±0.4V
FM/MW-version, 9kHz grid 531 - 1602kHz			1602kHz	5123		6.9V ±0.2V
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
MW FM/MW/LW- version, 9kHz grid 531 - 1602kHz			1602kHz	5123		8V ±0.2V
			531kHz	check		1.1V ±0.4V
FM IF						
FM	10.7MHz, 45mV continuous wave	D	 IC 7101 21 shortcircuit to block AFC 2141	5119	2	0 ± 3 mV DC
FM RF						
FM 87.5 - 108MHz (65.81 - 74, 87.5 - 108MHz)	108MHz	A mod=1kHz Δf=±22.5kHz	108MHz	2155	4	MAX ↕
	87.5MHz (65.81MHz)		87.5MHz (65.81MHz)	5131		
VCO						
FM	98MHz, 1mV continuous wave	A	98MHz	3142	3	152kHz ±1kHz [1)]
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	C Δf=±10kHz V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R	5111	5	 max. f_o symmetric
			 IC 7101 40 100nF 220R see remark [2)]	5112		
AM AFC **MW**		C continuous wave V_{RF} = 2mV		5114	2	0 ± 2 mV DC
AM RF [3)]						
MW [4)] FM/MW/LW- and FM/MW-version (9kHz grid) 531 - 1602kHz	1494kHz	 B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	5	 max. f_o symmetric ↕
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		
MW FM/AM-version, 10kHz grid 530 - 1700kHz	1500kHz		1500kHz	2106		↕
	560kHz		560kHz	5102		

ECO6, Sys + PA with frame aerial, 070799

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

[1)] If sensitivity of frequency counter is too low adjust to max. channel separation (input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

[2)] RC network serves for damping the IF-filter while adjusting the other one.

[3)] For AM RF adjustments the original frame antenna has to be used !

[4)] MW has to be aligned before LW.

↕ Repeat

Electrical Partslist *ECO6* SYSTEMS NON-CENELEC

MISCELLANEOUS

1101	2422 015 19376	SOCKET 2P CLICKFIT	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR 2 POLE	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2101 ©	4822 126 13692	47pF	1%	63V	
2102 ©	4822 126 13838	100nF	10%	50V	not USA
2103 ©	5322 122 31647	1nF	10%	63V	
2104 ©	5322 122 32531	100pF	5%	50V	
2105 ©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00191	3-11pF TRIMCAP.,N450			
2107	4822 121 51319	1µF	20%	50V	
2120 ©	4822 126 13689	18pF	1%	63V	
2124 ©	5322 122 32654	22nF	10%	63V	
2125 ©	2020 552 96199	560pF	1%	50V	
2126 ©	5322 122 31863	330pF	5%	50V	
2127 ©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130 ©	5322 122 32654	22nF	10%	63V	
2131 ©	4822 126 13482	470nF	20%	16V	
2132 ©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134 ©	4822 126 13188	15nF	5%	63V	not USA
2134 ©	5322 122 32654	22nF	10%	63V	USA only
2135 ©	4822 126 13188	15nF	5%	63V	not USA
2135 ©	5322 122 32654	22nF	10%	63V	USA only
2136 ©	4822 126 14076	220nF	20%	25V	
2137 ©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139 ©	4822 126 14236	15pF	5%	50V	
2140 ©	4822 126 13695	82pF	1%	63V	
2141 ©	4822 126 13838	100nF	10%	50V	
2143 ©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1µF	20%	63V	
2145 ©	4822 122 33575	220pF	5%	50V	
2146 ©	4822 122 33575	220pF	5%	50V	
2147 ©	4822 122 33575	220pF	5%	50V	
2148 ©	4822 122 33127	2,2nF	10%	63V	
2149 ©	5322 122 32659	33pF	5%	50V	RDS only
2150 ©	4822 126 13838	100nF	10%	50V	
2152 ©	4822 126 12105	33nF	5%	63V	not for East Europe
2152 ©	5322 116 80853	560pF	5%	63V	for East Europe only
2153 ©	4822 126 13486	15pF	2%	63V	not for East Europe
2153 ©	4822 122 33926	12pF	2%	50V	for East Europe only
2155	2020 800 00191	3-11pF TRIMCAP.,N450			
2159 ©	5322 122 32659	33pF	5%	50V	
2164 ©	4822 126 13482	470nF	20%	16V	
2165 ©	4822 126 13838	100nF	10%	50V	
2166 ©	5322 122 31647	1nF	10%	63V	
2167 ©	4822 122 33926	12pF	5%	50V	
2169 ©	4822 122 33127	2,2nF	10%	63V	RDS only

RESISTORS

3101 ©	4822 051 20333	33kΩ	5%	0,1W	
3102 ©	4822 117 10837	100kΩ	1%	0,1W	
3103 ©	4822 051 20822	8,2kΩ	5%	0,1W	
3104 ©	4822 117 13577	330Ω	1%	0,1W	
3105 ©	4822 117 11503	220Ω	5%	0,1W	
3132 ©	4822 051 20479	47Ω	5%	0,1W	
3134 ©	4822 051 20223	22kΩ	5%	0,1W	
3141 ©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143 ©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144 ©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145 ©	4822 117 11449	2,2kΩ	1%	0,1W	
3146 ©	4822 051 20229	22Ω	5%	0,1W	
3152 ©	4822 051 20471	470Ω	5%	0,1W	
3153 ©	4822 051 20471	470Ω	5%	0,1W	
3154 ©	4822 117 13577	330Ω	1%	0,1W	
3155 ©	4822 117 11503	220Ω	5%	0,1W	
3156 ©	4822 117 10837	100kΩ	1%	0,1W	
3157 ©	4822 117 10837	100kΩ	1%	0,1W	
3158 ©	4822 051 20471	470Ω	5%	0,1W	
3159 ©	4822 051 20471	470Ω	5%	0,1W	
3160 ©	4822 051 20471	470Ω	5%	0,1W	
3161 ©	4822 051 20223	22kΩ	5%	0,1W	
3167 ©	4822 051 20121	120Ω	5%	0,1W	
3168 ©	4822 051 20121	120Ω	5%	0,1W	
3169 ©	4822 051 20154	150kΩ	5%	0,1W	
3170 ©	4822 117 10837	100kΩ	1%	0,1W	
3172 ©	4822 051 20562	5,6kΩ	5%	0,1W	
3176 ©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3181 ©	4822 051 10102	1kΩ	2%	0,25W	
4103 ©	4822 051 20008	CHIP JUMPER 0805			
4106 ©	4822 051 20008	CHIP JUMPER 0805			
4107 ©	4822 051 20008	CHIP JUMPER 0805			
4108 ©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW
5109	4822 242 70665	FM-IF FILTER 10,7MHz
5110	4822 242 70665	FM-IF FILTER 10,7MHz
5111	2422 549 44023	AM-IF FILTER 450kHz
5112	4822 157 70302	AM-IF FILTER 450kHz
5114	4822 157 70302	AM-IF FILTER 450kHz
5119	4822 157 11443	DISCRIMINATOR COIL
5121	4822 242 10261	QUARTZ 75kHz
5123	2422 549 44108	RF-COIL, AM-OSCILLATOR
5130	4822 157 11843	RF COIL 1,5 TURNS
5131	4822 157 11843	RF COIL 1,5 TURNS

DIODES

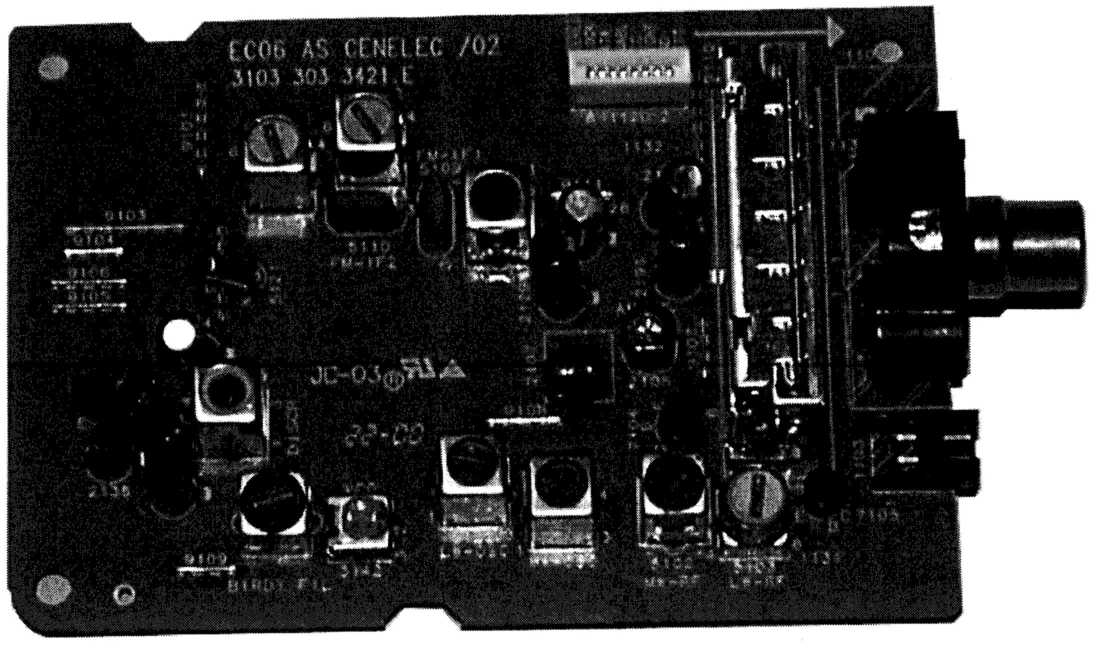
6103 ©	5322 130 34337	BAV99
6105 ©	4822 130 83075	HN1V02H
6106 ©	4822 130 83757	BAS216
6107 ©	9340 386 90115	BZX284-C11
6120 ©	4822 130 83757	BAS216
6130 ©	4822 130 82833	1SV228
6131 ©	4822 130 82833	1SV228

TRANSISTORS

7102	4822 130 42131	BF550	
7103 ©	5322 130 42756	BC857C	RDS only
7111 ©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	

INTEGRATED CIRCUITS

7101 ©	9351 740 80557	TEA5757H/V1, RADIO IC


EC06 AS CENELEC /02
3103 303 3421.E
JC-03
BIRDY FIL

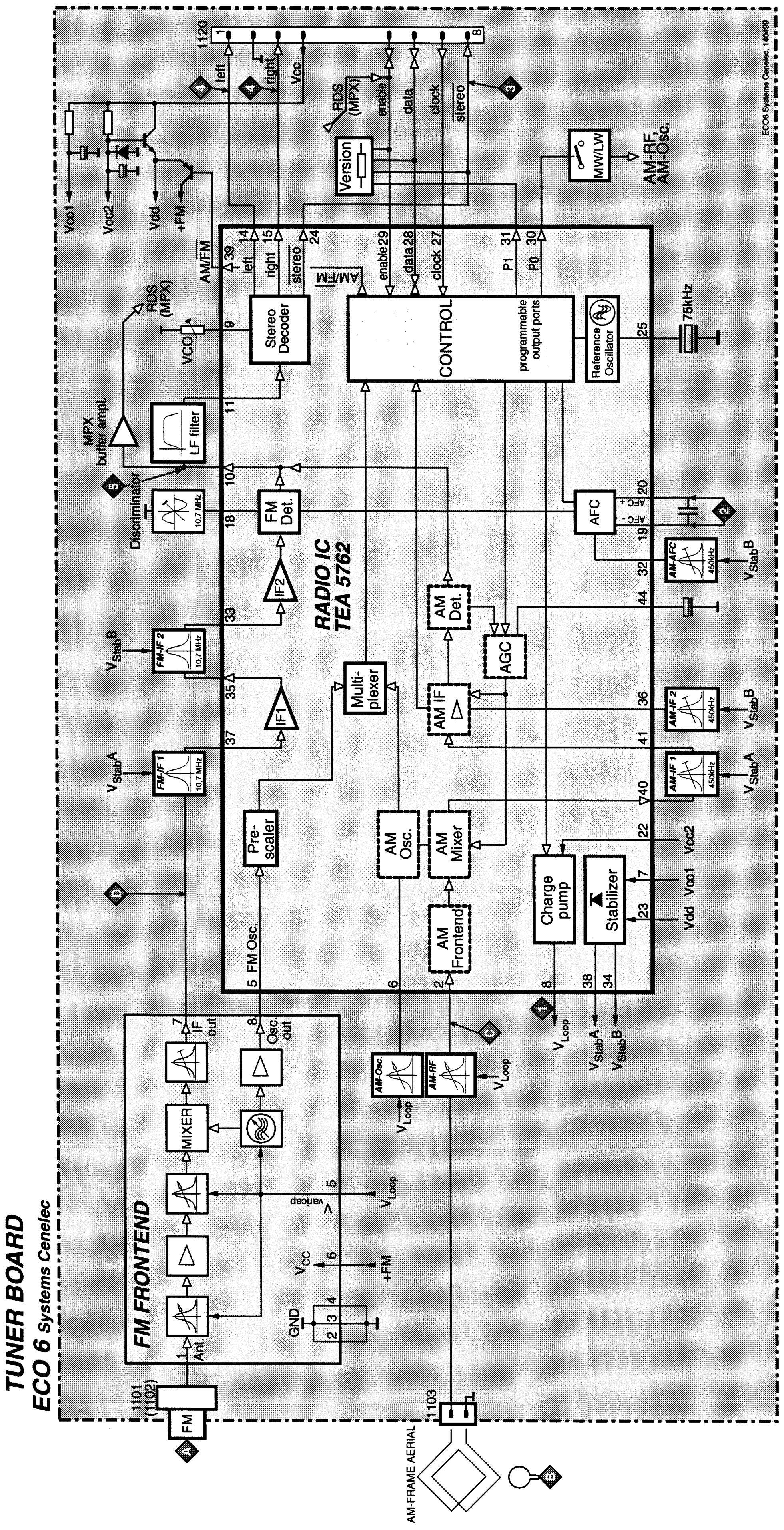
ECO6 Tuner Board

version: ***SYSTEMS CENELEC***

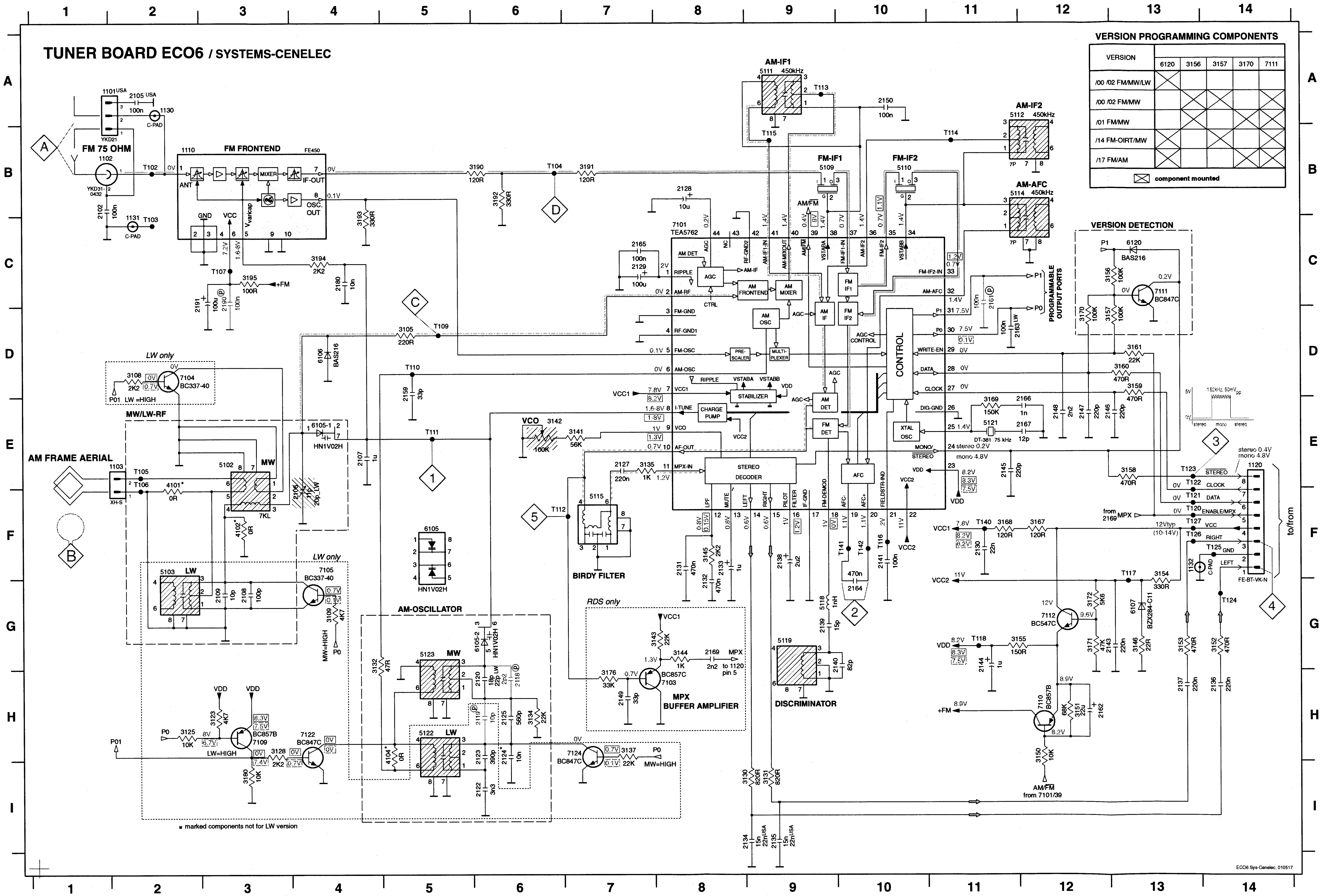
TABLE OF CONTENTS

Blockdiagram..7B-1
Schematic Diagram..7B-2
Component Layout...7B-3
Adjustment table 7B-3
Electrical Partslist..7B-4

BLOCK DIAGRAM


TUNER BOARD
ECO 6 Systems Cenelec
FM FRONTEND
RADIO IC
TEA 5762
CONTROL
programmable output ports
Reference Oscillator
Stereo Decoder
LF filter
MPX buffer ampl.
Discriminator
FM Det.
IF2
IF1
FM-IF 2
FM-IF 1
Multi-plexer
Pre-scaler
AM Det.
AGC
AM IF
AM Osc.
AM Mixer
AM Frontend
Charge pump
Stabilizer
AFC
AM-AFC
AM-IF 2
AM-IF 1
AM-Osc.
AM-RF
MIXER
Version
MW/LW
AM-RF
AM-Osc.
RDS (MPX)
VCO
75kHz
left
right
Vcc
enable
data
clock
stereo
Vcc1
Vcc2
Vdd
+FM
VStabA
VStabB
VLoop
GND
Ant.
IF out
Osc. out
FM
AM-FRAME AERIAL
1101 (1102)
1103
1120

TUNER BOARD ECO6 / SYSTEMS-CENELEC


FM 75 OHM
FM FRONTEND
AM FRAME AERIAL
MW/LW-RF
LW only
AM-OSCILLATOR
VCO
BIRDY FILTER
RDS only
MPX BUFFER AMPLIFIER
DISCRIMINATOR
AM-IF1
AM-IF2
AM-AFC
FM-IF1
FM-IF2
7101 TEA5762
STEREO DECODER
CONTROL
VERSION DETECTION
PROGRAMMABLE OUTPUT PORTS
to/from
FE-BT-VK-N
marked components not for LW version
ECO6 Sys-Cenelec. 010517

VERSION PROGRAMMING COMPONENTS

VERSION	6120	3156	3157	3170	7111
/00 /02 FM/MW/LW	☒				
/00 /02 FM/MW		☒	☒		☒
/01 FM/MW		☒		☒	☒
/14 FM-OIRT/MW	☒		☒		☒
/17 FM/AM	☒			☒	☒

☒ component mounted

1101	A2
1102	B1
1103	E2
1110	B2
1120	E14
1130	A2
1131	C2
1132	F13
2102	B1
2105	A2
2106	E3
2107	E4
2108	G3
2109	G3
2118	H6
2119	H6
2120	H6
2122	I6
2123	H6
2124	H6
2125	H6
2127	E7
2128	B8
2129	C7
2130	F11
2131	F8
2132	F8
2133	F8
2134	I8
2135	I9
2136	H14
2137	H13
2138	F9
2139	G9
2140	G9
2141	F10
2143	G12
2144	G11
2145	E11
2146	E12
2147	E12
2148	E12
2149	H7
2150	A10
2159	D5
2161	C11
2162	H12
2163	D11
2164	G10
2165	C7
2166	E11
2167	E11
2169	G8
2180	C4
2190	C3
2191	C3
3105	D5
3108	D2
3109	G4
3123	H3
3125	H2
3128	H3
3130	I9
3131	I9
3132	G4
3134	H6
3135	E7
3137	H7
3141	E7
3142	E6
3143	G7
3144	G8
3145	F8
3146	G13
3150	H12
3151	H12
3152	G14
3153	G13
3154	F13
3155	G12
3156	C12
3157	D12
3158	E13
3159	D13
3160	D13
3161	D13
3167	F12
3168	F11
3169	E11
3170	D12
3171	G12
3172	G12
3176	H7
3180	I3
3190	B6
3191	B7
3192	B6
3193	B4
3194	C4
3195	C3
4101	E2
4102	F3
4104	H5
5102	E3
5103	F2
5109	B9
5110	B10
5111	A9
5112	A11
5114	B11
5115	E7
5118	G9
5119	G9
5121	E11
5122	H5
5123	G5
6105-1	E4
6105-2	G6
6106	D4
6107	G13
6120	C13
7101	C8
7103	H8
7104	D2
7105	F4
7109	H3
7110	H12
7111	C13
7112	G12
7122	H4
7124	H7
T102	B2
T103	B2
T104	B6
T105	E2
T106	E2
T107	C3
T109	D5
T110	D5
T111	E5
T112	F7
T113	A9
T114	B11
T116	F10
T117	F13
T118	G11
T120	F13
T121	F13
T122	E13
T123	E13
T124	G14
T125	F14
T126	F13
T127	F13
T140	F11
T141	F10
T142	F10

LEGEND

* ... only assembled in FM/AM-version
ⓟ...for provision only
USA ... for USA version only
LW ... for LW version only

SMD jumper
41xx
0R

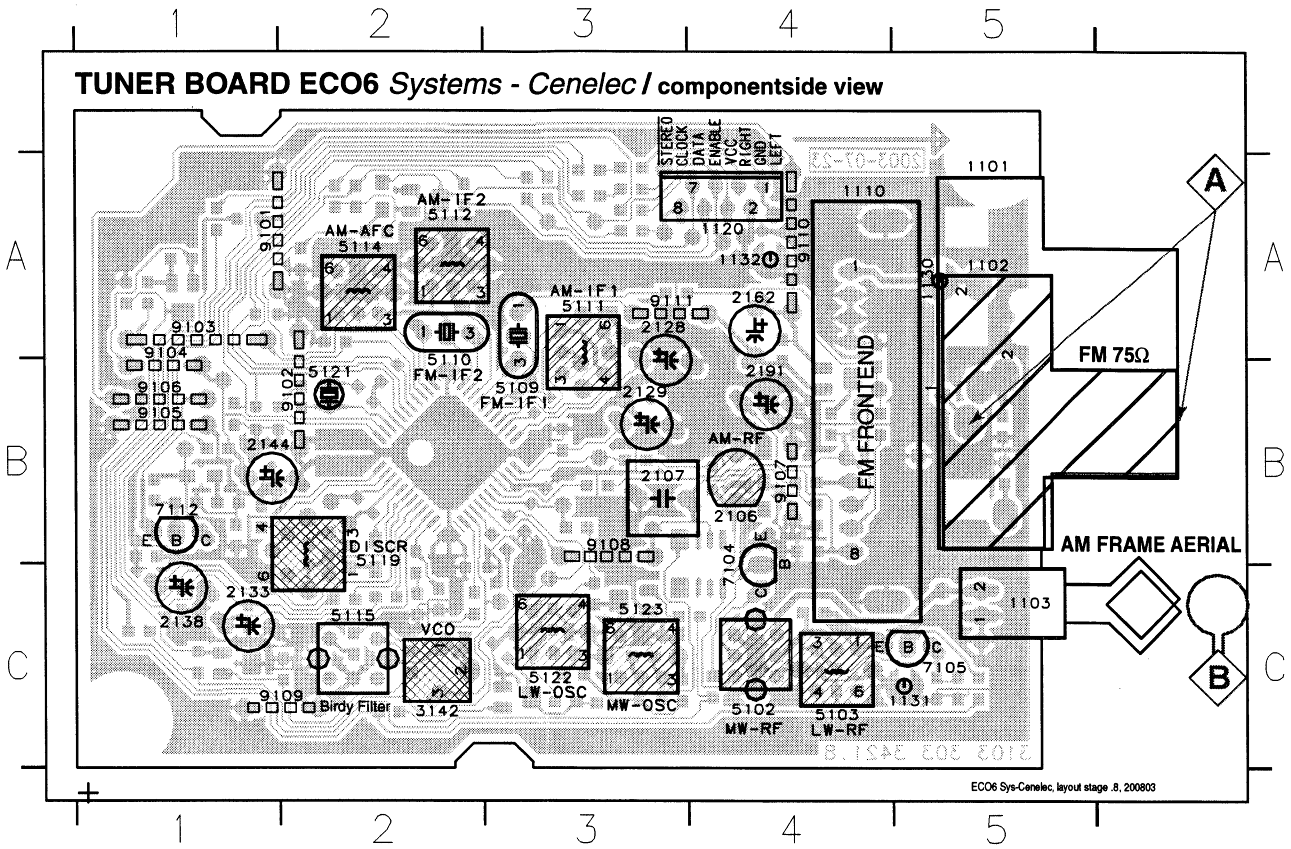
Ⓥ EVM

...V FM mode stereo
...V MW mode
...V LW mode
voltages measured while
set is tuned to a strong transmitter

Signal path
FM
AM
MPX (Audio Frequency)
⇨ AF - left/right

1101	B5	1110	B4	1131	C5	2107	B3	2133	C1	2162	A4	5102	C4	5110	A2	5114	A2	5121	B2	7104	C4	9101	A2	9104	B1	9107	B4	9110	A4
1102	B5	1120	A4	1132	A4	2128	A3	2138	B1	2191	B4	5103	C4	5111	A3	5115	C2	5122	C3	7105	C5	9102	B2	9105	B1	9108	B3	9111	A3
1103	C5	1130	A5	2106	B4	2129	B3	2144	B1	3142	C2	5109	B3	5112	A2	5119	B2	5123	C3	7112	B1	9103	A1	9106	B1	9109	C2		

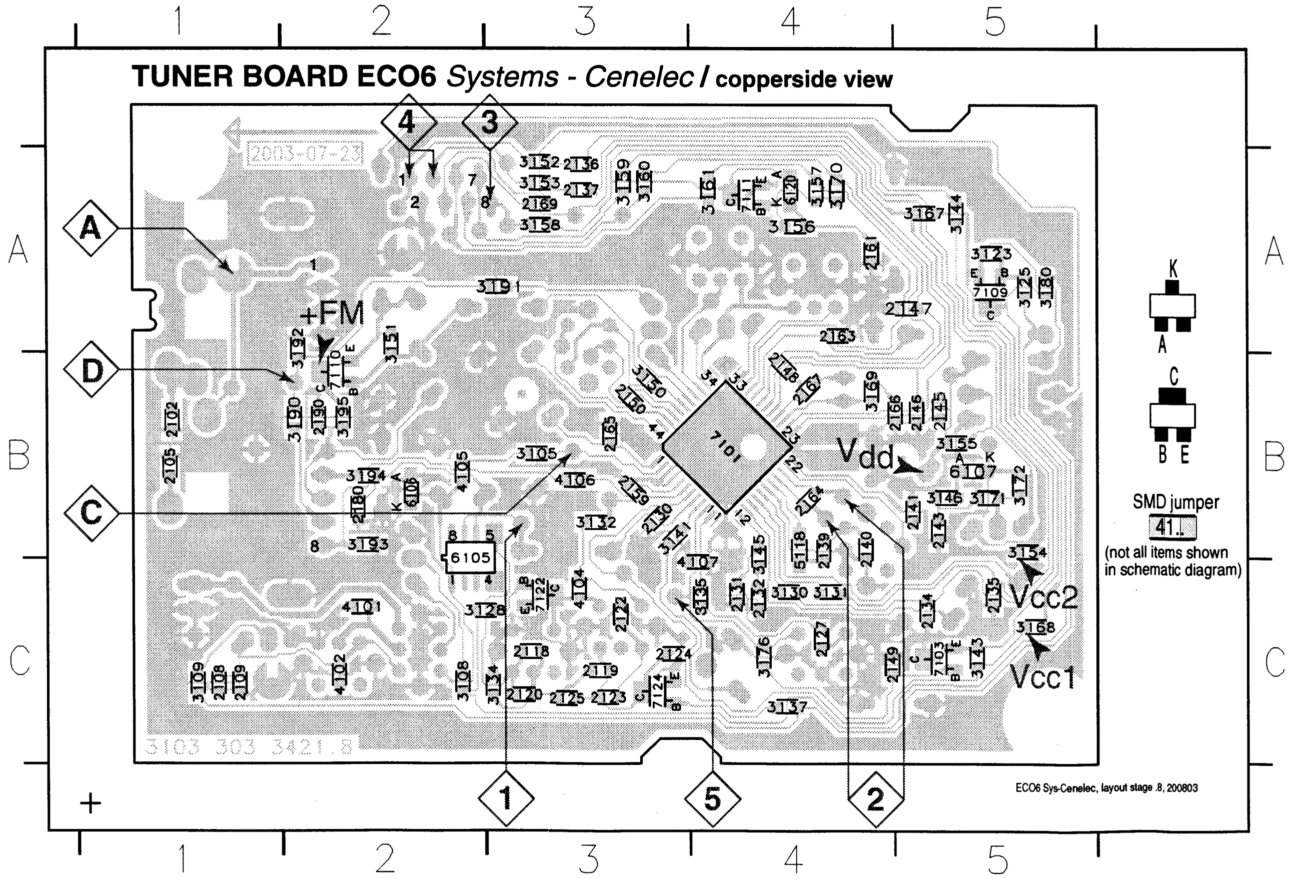
TUNER BOARD ECO6 *Systems - Cenelec* / componentside view


1
2
3
4
5
A
B
C
STEREO
CLOCK
DATA
ENABLE
VCC
RIGHT
GND
LEFT
2003-07-23
1101
1110
1120
1132
9110
9101
9102
AM-IF2
5112
AM-AFC
5114
AM-IF1
5111
9111
2128
2162
2191
9103
9104
9106
9105
5121
5110
FM-IF2
5109
FM-IF1
2129
AM-RF
FM FRONTEND
1102
FM 75Ω
2144
2107
2106
9107
7112
DISCR
5119
9108
7104
AM FRAME AERIAL
2133
2138
5115
VCO
5123
1103
9109
Birdy Filter
3142
5122
LW-OSC
MW-OSC
5102
MW-RF
5103
LW-RF
7105
1131
1130
3103 303 3421.8

ECO6 Sys-Cenelec, layout stage .8, 200803

2102	B1	2120	C3	2130	B3	2137	A3	2146	B5	2161	A4	2169	A3	3123	A5	3134	C3	3145	C4	3154	B5	3160	A3	3171	B5	3192	A2	4104	C3	6106	B2	7110	B2
2105	B1	2122	C3	2131	C4	2139	B4	2147	A5	2163	A4	2180	B2	3125	A5	3135	C4	3146	B5	3155	B5	3161	A4	3172	B5	3193	B2	4105	B2	6107	B5	7111	A4
2108	C1	2123	C3	2132	C4	2140	B4	2148	B4	2164	B4	2190	B2	3128	C2	3137	C4	3150	B3	3156	A4	3167	A5	3176	C4	3194	B2	4106	B3	6120	A4	7122	C3
2109	C1	2124	C3	2134	C5	2141	B5	2149	C4	2165	B3	3105	B3	3130	C4	3141	B3	3151	A2	3157	A4	3168	C5	3180	A5	3195	B2	4107	C4	7101	B4	7124	C3
2118	C3	2125	C3	2135	C5	2143	B5	2150	B3	2166	B5	3108	C2	3131	C4	3143	C5	3152	A3	3158	A3	3169	B4	3190	B2	4101	C2	5118	C4	7103	C5		
2119	C3	2127	C4	2136	A3	2145	B5	2159	B3	2167	B4	3109	C1	3132	B3	3144	A5	3153	A3	3159	A3	3170	A4	3191	A3	4102	C2	6105	B2	7109	A5		

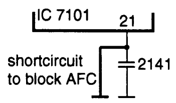
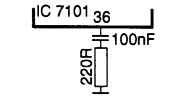
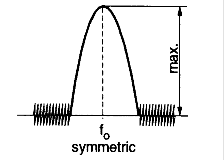
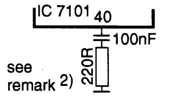
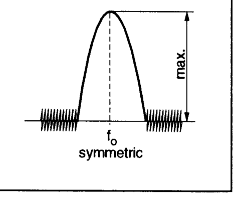
TUNER BOARD ECO6 *Systems - Cenelec* / copperside view


1
2
3
4
5
A
B
C
4
3
A
D
C
1
5
2
2003-07-23
+FM
7101
Vdd
Vcc2
Vcc1
6105
6107
K
A
C
B E
SMD jumper
41..
(not all items shown in schematic diagram)
3103 303 3421.8

ECO6 Sys-Cenelec, layout stage .8, 200803

These assembly drawings show a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

TUNER ADJUSTMENT TABLE (**ECO6 Cenelec** FM/MW - and FM/MW/LW - versions with AM-frame aerial)

Waverange	Input frequency	Input	Tuned to	Adjust	Output	Scope/Voltmeter
VARICAP ALIGNMENT						
FM 87.5 - 108MHz (50kHz grid)			108MHz	check	◇1	8V ±1.2V
			87.5MHz	check		1.6V ±0.5V
MW 531 - 1602kHz (9kHz grid)			1602kHz	5123		8V ±0.2V 3-band 6.9V ±0.2V 2-band
			531kHz	check		1.1V ±0.4V
LW 153 - 279kHz (3kHz grid)			279kHz	5122		8V ±0.2V
			153kHz	check		1.1V ±0.4V
FM - IF						
FM	10.7MHz, 45mV continuous wave	◇D	 IC 7101 21 shortcircuit to block AFC 2141	5119	◇2	0mV ±3mV
FM - VCO						
FM	98MHz, 1mV continuous wave	◇A	98MHz	3142	◇3	152kHz ±1kHz 1)
FM RF (channel separation)	Note: The FM-frontend unit has already been adjusted by the factory and needs therefore no further adjustments for service purposes.					
FM	98MHz, 1mV 90% Left + 9% pilot mod=1kHz	◇A	98MHz	IF coil inside FM frontend 1110	◇4	right channel min.
AM IF						
MW	450kHz connect pin 6 of IC 7101 (AM Osc.) with 3.3kΩ to Vcc	◇C Δf = ±10kHz V_{RF} = 0.5mV (as low as possible)	 IC 7101 36 100nF 220R	5111	◇5	 max. f_o symmetric
			 IC 7101 40 100nF 220R see remark 2)	5112		
AM AFC **MW**		◇C continuous wave V_{RF} = 2mV		5114	◇2	0mV ±2mV
AM RF 3)						
MW	1494kHz	◇B Δf = ±30kHz V_{RF} as low as possible	1494kHz	2106	◇5	 max. f_o symmetric
	558kHz		558kHz	5102		
LW	198kHz		198kHz	5103		

ECO6 Sys Cenelec, 190599

Use Service Testprogram. By selecting the TUNER TEST test frequencies will be stored as preset frequencies automatically.

1) If sensitivity of frequency counter is too low adjust to max. channel separation
(input signal: stereo left 90% + 9%, adjust output on right channel to minimum)

2) RC network serves for damping the IF-filter while adjusting the other one.

3) For AM RF adjustments the original frame antenna has to be used!
MW has to be aligned before LW.

↕ Repeat

Electrical Partslist *ECO6* *SYSTEMS-CENELEC*

MISCELLANEOUS

1101	2422 015 19376	SOCKET CLICKFIT 2P	USA only
1102	4822 267 10283	SOCKET COAX, IEC 75Ω	not USA
1103	4822 265 31184	JST CONNECTOR, 2 POLE	
1110	2422 542 90071	FM FRONTEND	
1120	4822 265 11515	FFC SOCKET, 8P	

CAPACITORS

2102©	4822 126 13838	100nF	10%	50V	not USA
2105©	4822 126 13838	100nF	10%	50V	USA only
2106	2020 800 00204	TRIMCAP. 4,2 - 20pF, N750			LW only
2106	2020 800 00191	TRIMCAP. 3 - 11pF, N450			FM/AM only
2107	4822 121 51319	1µF	20%	50V	
2108©	5322 122 32531	100pF	5%	50V	LW only
2109©	5322 122 32448	10pF	5%	50V	LW only
2120©	4822 126 13689	18pF	1%	63V	FM/AM only
2120©	5322 122 32658	22pF	5%	50V	LW only
2122©	4822 122 33891	3,3nF	10%	63V	LW only
2123©	2020 552 93494	390pF	1%	50V	LW only
2124©	4822 122 33177	10nF	20%	50V	FM/AM only
2125©	2020 552 96199	560pF	1%	50V	
2127©	4822 126 14076	220nF	20%	25V	
2128	4822 124 40248	10µF	20%	63V	
2129	4822 124 41584	100µF	20%	10V	
2130©	5322 122 32654	22nF	10%	63V	
2131©	4822 126 13482	470nF	20%	16V	
2132©	4822 126 13482	470nF	20%	16V	
2133	4822 124 21913	1µF	20%	63V	
2134©	3198 017 31530	15nF	10%	50V	not USA
2134©	5322 122 32654	22nF	10%	63V	USA only
2135©	3198 017 31530	15nF	10%	50V	not USA
2135©	3198 017 32230	22nF	10%	25V	USA only
2136©	4822 126 14076	220nF	20%	25V	
2137©	4822 126 14076	220nF	20%	25V	
2138	4822 124 22652	2,2µF	20%	50V	
2139©	4822 126 14236	15pF	5%	50V	
2140©	4822 126 13695	82pF	1%	63V	
2141©	4822 126 13838	100nF	10%	50V	
2143©	4822 126 14076	220nF	20%	25V	
2144	4822 124 21913	1µF	20%	63V	
2145©	4822 122 33575	220pF	5%	50V	
2146©	4822 122 33575	220pF	5%	50V	
2147©	4822 122 33575	220pF	5%	50V	
2148©	4822 122 33127	2,2nF	10%	63V	
2149©	5322 122 32659	33pF	5%	50V	RDS only
2150©	4822 126 13838	100nF	10%	50V	
2159©	5322 122 31151	22µF	20%	50V	
2163©	4822 126 13838	100nF	10%	50V	LW only
2164©	4822 126 13482	470nF	20%	16V	
2165©	4822 126 13838	100nF	10%	50V	
2166©	5322 122 31647	1nF	10%	63V	
2167©	4822 122 33926	12pF	5%	50V	
2169©	4822 122 33127	2,2nF	10%	63V	RDS only
2180©	3198 017 31030	10nF	10%	50V	
2190©	4822 126 13838	100nF	10%	50V	
2191	4822 124 40178	100µF	20%	10V	

RESISTORS

3105©	4822 117 11503	220Ω	5%	0,1W	
3108©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3109©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3123©	4822 051 20472	4,7kΩ	5%	0,1W	LW only
3125©	4822 117 10833	10kΩ	1%	0,1W	LW only

RESISTORS

3128©	4822 117 11449	2,2kΩ	1%	0,1W	LW only
3130©	3198 021 38210	820Ω	5%	0,06W	
3131©	3198 021 38210	820Ω	5%	0,06W	
3132©	4822 051 20479	47Ω	5%	0,1W	
3134©	4822 051 20223	22kΩ	5%	0,1W	
3135©	3198 021 31020	1kΩ	5%	0,06W	
3137©	4822 051 20223	22kΩ	5%	0,1W	LW only
3141©	4822 117 11148	56kΩ	1%	0,1W	
3142	4822 100 12159	TRIMPOT. 100kΩ			
3143©	4822 051 20223	22kΩ	5%	0,1W	RDS only
3144©	4822 051 10102	1kΩ	2%	0,25W	RDS only
3145©	4822 117 11449	2,2kΩ	1%	0,1W	
3146©	4822 051 20229	22Ω	5%	0,1W	
3150©	4822 117 10833	10kΩ	1%	0,1W	
3151©	4822 051 20683	68kΩ	5%	0,1W	
3152©	4822 051 20471	470Ω	5%	0,1W	
3153©	4822 051 20471	470Ω	5%	0,1W	
3154©	4822 117 13577	330Ω	1%	0,1W	
3155©	4822 117 10353	150Ω	5%	0,1W	
3156©	4822 117 10837	100kΩ	1%	0,1W	
3157©	4822 117 10837	100kΩ	1%	0,1W	
3158©	4822 051 20471	470Ω	5%	0,1W	
3159©	4822 051 20471	470Ω	5%	0,1W	
3160©	4822 051 20471	470Ω	5%	0,1W	
3161©	4822 051 20223	22kΩ	5%	0,1W	
3167©	4822 051 20121	120Ω	5%	0,1W	
3168©	4822 051 20121	120Ω	5%	0,1W	
3169©	4822 051 20154	150kΩ	5%	0,1W	
3170©	4822 117 10837	100kΩ	1%	0,1W	
3171©	4822 117 10834	47kΩ	1%	0,1W	
3172©	4822 051 20562	5,6kΩ	5%	0,1W	
3176©	4822 051 20333	33kΩ	5%	0,1W	RDS only
3180©	4822 117 10833	10kΩ	1%	0,1W	LW only
3190©	4822 051 20121	120Ω	5%	0,1W	
3191©	4822 051 20121	120Ω	5%	0,1W	
3192©	4822 117 13577	330Ω	1%	0,1W	
3193©	4822 117 13577	330Ω	1%	0,1W	
3194©	4822 117 11449	2,2kΩ	1%	0,1W	
3195©	4822 051 20101	100Ω	5%	0,1W	
4101©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4102©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4104©	4822 051 20008	CHIP JUMPER 0805			FM/AM only
4105©	4822 051 20008	CHIP JUMPER 0805			
4106©	4822 051 20008	CHIP JUMPER 0805			
4107©	4822 051 20008	CHIP JUMPER 0805			

COILS

5102	4822 157 71634	RF-COIL MW	
5103	2422 549 44107	RF-COIL LW	LW only
5109	4822 157 71639	FM-IF FILTER 10,7MHz	
5110	4822 242 70665	FM-IF FILTER 10,7MHz	
5111	2422 549 44023	AM-IF FILTER 450kHz	
5112	4822 157 70302	AM-IF FILTER 450kHz	
5114	4822 157 70302	AM-IF FILTER 450kHz	
5115	4822 157 71636	ANTI BIRDY FILTER	
5118©	2422 535 95881	100nH	
5119	4822 157 11443	DISCRIMINATOR COIL	
5121	4822 242 10261	QUARTZ 75kHz	
5122	2422 549 44108	RF-COIL, LW-OSCILLATOR	LW only
5123	2422 549 44108	RF-COIL, MW-OSCILLATOR	

DIODES

6105©	4822 130 83075	HN1V02H
6106©	4822 130 83757	BAS216
6107©	9340 386 90115	BZX284-C11
6120©	4822 130 83757	BAS216

TRANSISTORS

7103©	5322 130 42756	BC857C	RDS only
7104	9322 003 64676	TBC337-40	LW only
7105	9322 003 64676	TBC337-40	LW only
7109©	4822 130 60373	BC856B	LW only
7110©	4822 130 60373	BC856B	
7111©	5322 130 42755	BC847C	
7112	4822 130 44503	BC547C	
7122©	5322 130 42755	BC847C	LW only
7124©	5322 130 42755	BC847C	LW only

INTEGRATED CIRCUITS

7101	4822 209 90315	TEA5762H/V1, RADIO IC

MAINS BOARD

TABLE OF CONTENTS

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Mains Socket - Circuit diagram & Component layout 8-1
Mains Board - Component layout 8-2
Mains Board - Chip layout 8-3
Mains Board - Circuit diagram 8-4
Electrical parts list 8-5

Brief introduction of the Mains Board

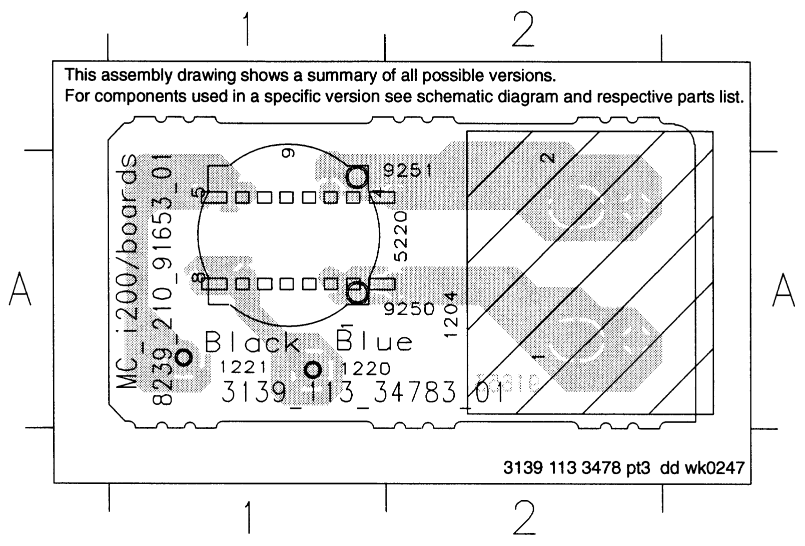
ECO Power
Standby Transformer 5203 provides the LPS supply to control the relay 1210, cutting of the Mains supply to the Mains transformer during the ECO Power (standby) mode.

The Mains transformer provides the following:

- 5V6_ECO for Low Power Supply
- +A, +A/2 and +B to the Combi board

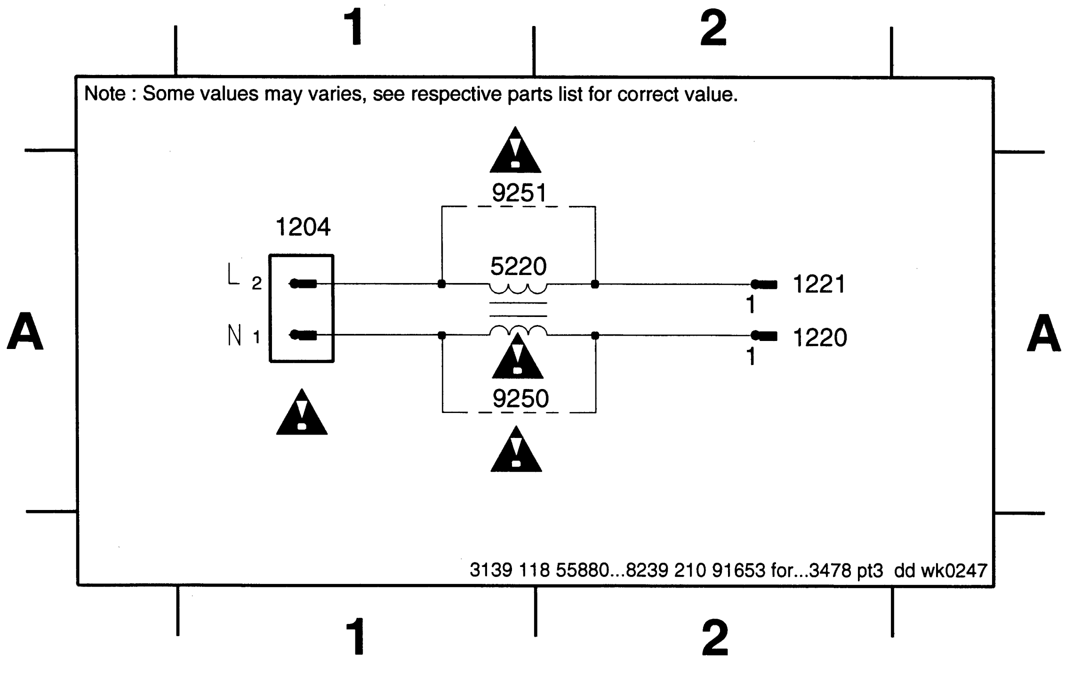
MAINS SOCKET - CIRCUIT DIAGRAM & COMPONENT LAYOUT

1204 A2 1221 A1 9250 A2
1220 A1 5220 A2 9251 A2



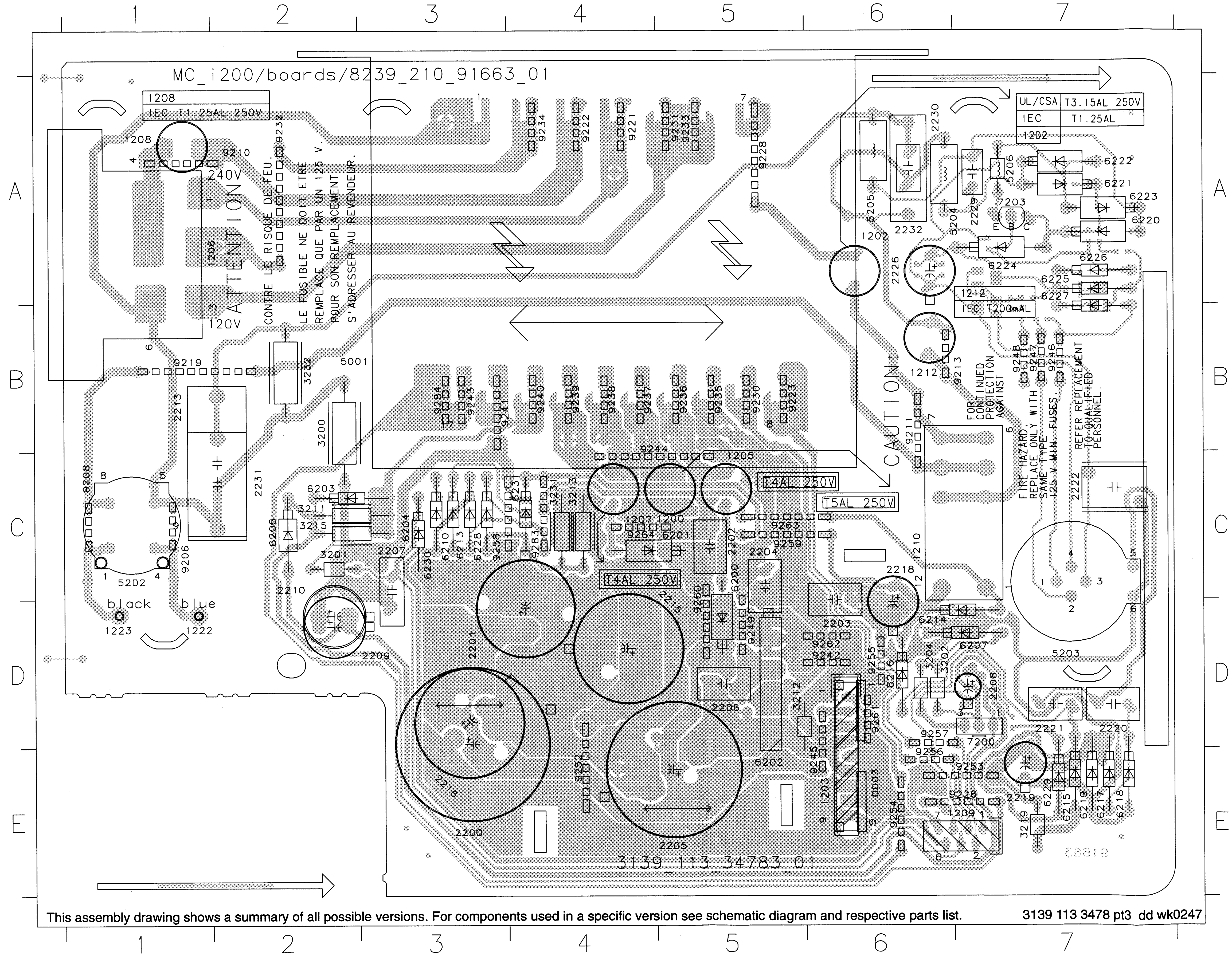
1
2
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram and respective parts list.
A
MC_i200/boards
8239_210_91653_01
9251
5220
9250
1204
Black Blue
1221
1220
3139_113_34783_01
3139 113 3478 pt3 dd wk0247

1204 A1 **1220 A2** **1221 A2** **5220 A1** **9250 A1** **9251 A1**



1
2
Note : Some values may varies, see respective parts list for correct value.
A
9251
1204
L 2
N 1
5220
1221
1220
9250
3139 118 55880...8239 210 91653 for...3478 pt3 dd wk0247

MAINS BOARD - COMPONENT LAYOUT

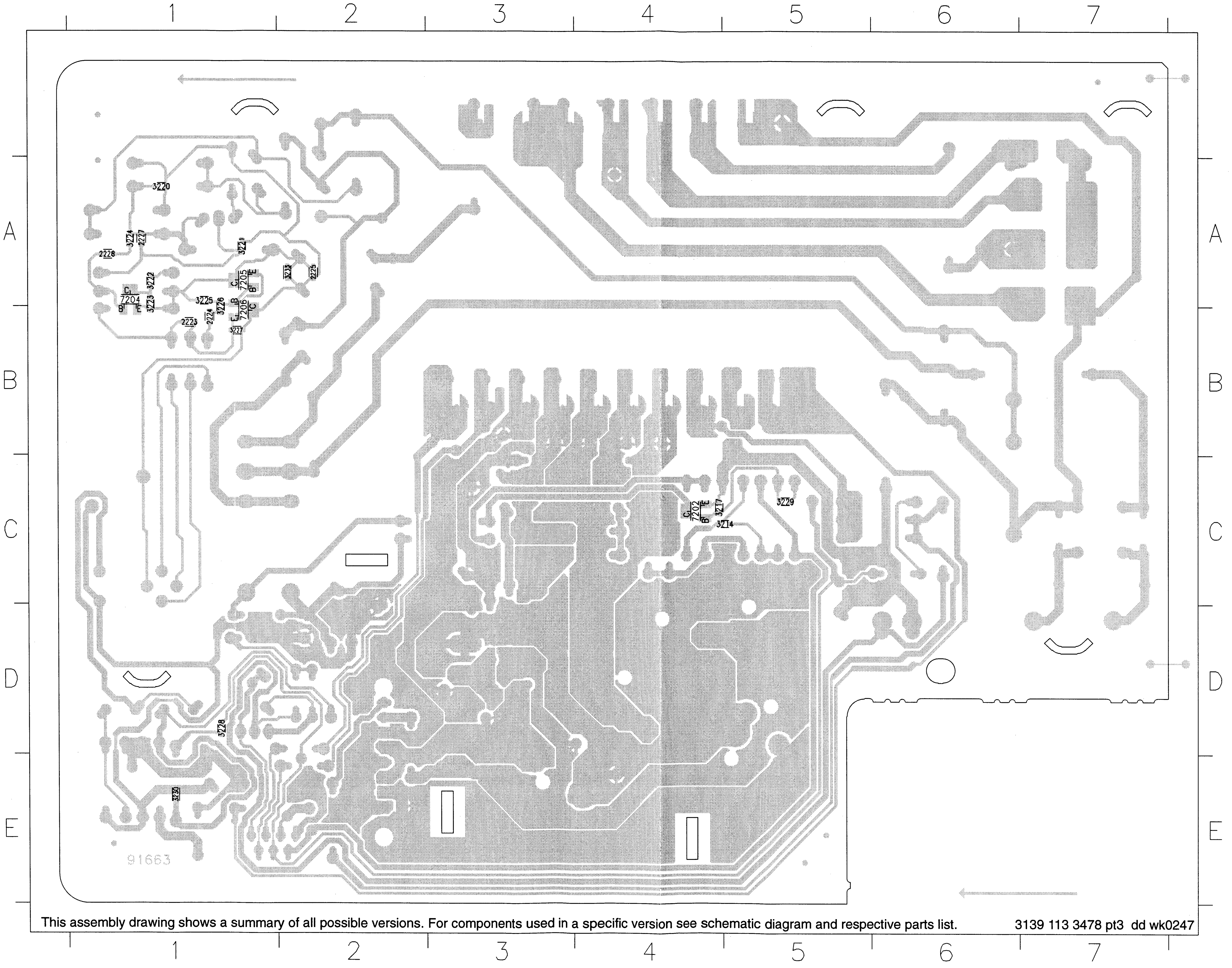

MC_i200/boards/8239_210_91663_01
1208
IEC T1.25AL 250V
240V
120V
ATTENTION
CONTRE LE RISQUE DE FEU.
LE FUSIBLE NE DOIT ETRE
REMPLACE QUE PAR UN 125 V.
POUR SON REMPLACEMENT
S'ADRESSER AU REVENDEUR.
UL/CSA T3.15AL 250V
IEC T1.25AL
1202
1212
IEC T200mAL
CAUTION:
FOR CONTINUED PROTECTION AGAINST
FIRE HAZARD,
REPLACE ONLY WITH
SAME TYPE
125 V MIN. FUSES.
REFER REPLACEMENT
TO QUALIFIED
PERSONNEL.
T4AL 250V
T5AL 250V
T4AL 250V
black
blue
1223
1222
5202
2200
2201
2205
2216
2215
3139_113_34783_01
1
2
3
4
5
6
7
A
B
C
D
E

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3478 pt3 dd wk0247

0003	E6
1200	C5
1202	A6
1203	E6
1205	C5
1206	A2
1207	C4
1208	A1
1209	E7
1210	C6
1212	B6
1222	D1
1223	D1
2200	E3
2201	D3
2202	C5
2203	D6
2204	C5
2205	E5
2206	D5
2207	C3
2208	D7
2209	D3
2210	C2
2213	B1
2215	D5
2216	E3
2218	C6
2219	E7
2220	D7
2221	D7
2222	C7
2226	A6
2229	A7
2230	A6
2231	C2
2232	A6
3200	B2
3201	C2
3202	D6
3204	D6
3211	C2
3212	D5
3213	C4
3215	C2
3219	E7
3231	C4
3232	B2
5001	B2
5202	C1
5203	D7
5204	A7
5205	A6
5206	A7
6200	C5
6201	C5
6202	E5
6203	C2
6204	C3
6206	C2
6207	D7
6210	C3
6213	C3
6214	D6
6215	E7
6216	D6
6217	E7
6218	E7
6219	E7
6220	A7
6221	A7
6222	A7
6223	A7
6224	A7
6225	A7
6226	A7
6227	A7
6228	C3
6229	E7
6230	C3
6231	C4
7200	D7
7203	A7
9206	C1
9208	C1
9210	A2
9211	B6
9213	B7
9219	B1
9221	A4
9222	A4
9223	B5
9226	E7
9228	A5
9230	B5
9231	A5
9232	A2
9233	A5
9234	A4
9235	B5
9236	B5
9237	B4
9238	B4
9239	B4
9240	B4
9241	B3
9242	D6
9243	B3
9244	B4
9245	E6
9246	B7
9247	B7
9248	B7
9249	D5
9252	E4
9253	E7
9254	E6
9255	D6
9256	E6
9257	D6
9258	C3
9259	C5
9260	C5
9261	D6
9262	D6
9263	C5
9264	C4
9283	C4
9284	B3

MAINS BOARD - CHIP LAYOUT

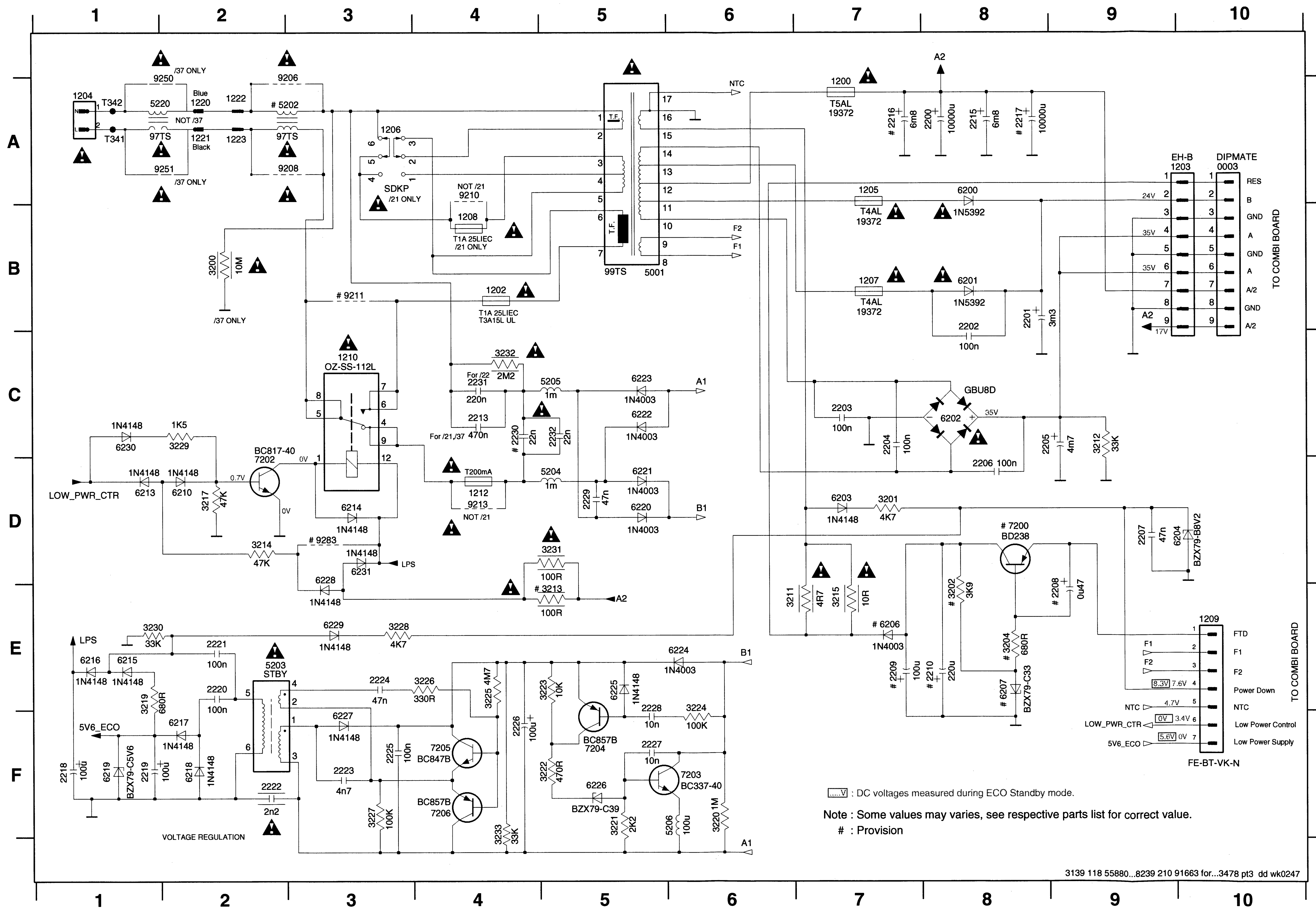

1
2
3
4
5
6
7
A
B
C
D
E
3220
3224
2227
2228
3221
3233
2225
7204
3222
3223
3225
3226
2224
7205
7206
2223
3227
7202
3217
3214
3229
3228
3230
91663

This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

3139 113 3478 pt3 dd wk0247

2223	B1
2224	B1
2225	A2
2227	A1
2228	A1
3214	C5
3217	C4
3220	A1
3221	A1
3222	A1
3223	A1
3224	A1
3225	A1
3226	B1
3227	B1
3228	D1
3229	C5
3230	E1
3233	A2
7202	C4
7204	A1
7205	A1
7206	B1

MAINS BOARD - CIRCUIT DIAGRAM


1 2 3 4 5 6 7 8 9 10
A B C D E F
1204
T342
T341
/37 ONLY
9250
5220
Blue
1220
NOT /37
97TS
1221
Black
9251
1222
1223
9206
# 5202
97TS
9208
1206
SDKP
/21 ONLY
NOT /21
9210
1208
T1A 25LIEC
/21 ONLY
3200
10M
/37 ONLY
T.F.
99TS
5001
NTC
F2
F1
1200
T5AL
19372
A2
# 2216 6m8
2200 10000u
2215 6m8
# 2217 10000u
1205
T4AL
19372
6200
1N5392
1207
T4AL
19372
6201
1N5392
2202
100n
2201 3m3
EH-B
1203
DIPMATE
0003
24V
35V
35V
A2
17V
RES
B
GND
A
GND
A
A/2
GND
A/2
TO COMBI BOARD
# 9211
1202
T1A 25LIEC
T3A15L UL
1210
OZ-SS-112L
3232
2M2
For /22
2231
220n
2213
For /21/37 470n
# 2230 22n
2232 22n
5205
1m
6223
1N4003
A1
6222
1N4003
T200mA
1212
9213
NOT /21
5204
1m
2229 47n
6221
1N4003
6220
1N4003
B1
2203
100n
2204 100n
GBU8D
6202
35V
2206 100n
2205 4m7
3212 33K
1N4148
6230
1K5
3229
BC817-40
7202
0V
0.7V
LOW_PWR_CTR
1N4148
6213
1N4148
6210
3217 47K
0V
6214
1N4148
# 9283
3214
47K
1N4148
6231
LPS
6228
1N4148
3231
100R
# 3213
100R
A2
6203
1N4148
3201
4K7
# 7200
BD238
2207 47n
6204 BZX79-B8V2
3211 4R7
3215 10R
# 3202 3K9
# 2208 0u47
# 6206
1N4003
# 3204 680R
# 2209 100u
# 2210 220u
# 6207 BZX79-C33
1209
FTD
F1
F2
Power Down
NTC
Low Power Control
Low Power Supply
8.3V 7.6V
NTC 4.7V
LOW_PWR_CTR 0V 3.4V
5V6_ECO 5.6V 0V
FE-BT-VK-N
TO COMBI BOARD
LPS
3230
33K
2221
100n
6229
1N4148
3228
4K7
6216
1N4148
6215
1N4148
3219 680R
2220
100n
5203
STBY
6217
1N4148
5V6_ECO
2218 100u
6219 BZX79-C5V6
2219 100u
6218 1N4148
2222
2n2
VOLTAGE REGULATION
2224
47n
3226
330R
6227
1N4148
2223
4n7
2225 10n
3227 100K
7205
BC847B
BC857B
7206
3225 4M7
2226 100u
3233 33K
3223 10K
3222 470R
6226
BZX79-C39
3221 2K2
6225 1N4148
BC857B
7204
2228
10n
3224
100K
2227
10n
7203
BC337-40
5206 100u
3220 1M
6224
1N4003
B1
A1

V : DC voltages measured during ECO Standby mode.

Note : Some values may varies, see respective parts list for correct value.
# : Provision

3139 118 55880...8239 210 91663 for...3478 pt3 dd wk0247

0003	A10
1200	A7
1202	B4
1203	A9
1205	A7
1206	A3
1207	B7
1208	B4
1209	E10
1210	C3
1212	D4
1222	A2
1223	A2
2200	A8
2201	B8
2202	B8
2203	C7
2204	C7
2205	C8
2206	D8
2207	D9
2208	E9
2209	E7
2210	E8
2213	C4
2215	A8
2216	A7
2217	A8
2218	F1
2219	F1
2220	E2
2221	E2
2222	F2
2223	F3
2224	E3
2225	F3
2226	F4
2227	F5
2228	E5
2229	D5
2230	C4
2231	C4
2232	C5
3200	B2
3201	D7
3202	E8
3204	E8
3211	E6
3212	C9
3213	E5
3214	D2
3215	E7
3217	D2
3219	E1
3220	F6
3221	F5
3222	F5
3223	E5
3224	F6
3225	E4
3226	E4
3227	F3
3228	E3
3229	C2
3230	E1
3231	D5
3232	C4
3233	F4
5001	B5
5202	A3
5203	E3
5204	D5
5205	C5
5206	F6
6200	A8
6201	B8
6202	C8
6203	D7
6204	D9
6206	E7
6207	E8
6210	D2
6213	D1
6214	D3
6215	E1
6216	E1
6217	F2
6218	F2
6219	F1
6220	D5
6221	D5
6222	C5
6223	C5
6224	E6
6225	E5
6226	F5
6227	F3
6228	D3
6229	E3
6230	C1
6231	D3
7200	D8
7202	D2
7203	F6
7204	E5
7205	F4
7206	F4
9206	A3
9208	A3
9210	A4
9211	B3
9213	D4
9283	D3

ELECTRICAL PARTS LIST - MAINS BOARD

MISCELLANEOUS

1200	2422 086 10963	⚠	Fuse RAD LT 5A 250V	
1202	4822 071 51252	⚠	Fuse RAD LT 1,25A 250V	/22/25
1202	4822 252 51121	⚠	Fuse RAD LT 3,15A 250V	/37
1204	4822 265 31015	⚠	Mains Socket	/22/25
1204	2422 030 00328	⚠	Mains Socket	/37
1205	2422 086 10786	⚠	Fuse RAD LT 4A 250V	
1207	2422 086 10786	⚠	Fuse RAD LT 4A 250V	
1209	4822 267 10953		Flex Connector 7P	
1210	2422 132 07519	⚠	Relay 1P 12V 16A OZ-SS	

CAPACITORS

2200	4822 124 12012		4700uF 20% 25V	
2201	4822 124 42367		3300uF 20% 35V	
2202	5322 121 42386		100nF 5% 63V	
2203	5322 121 42386		100nF 5% 63V	
2204	5322 121 42386		100nF 5% 63V	
2205	4822 124 80415		4700uF 20% 50V	
2206	5322 121 42386		100nF 5% 63V	
2207	4822 126 14559		47nF 50V	
2208	5322 124 41948		470nF 20% 50V	
2210	2020 012 93547		100uF 20% 63V	
2213	4822 126 13589	⚠	470nF 275V	/37
2218	2020 012 93583		100uF 20% 25V	/22/25
2218	3198 029 31010		100uF 20% 25V	/37
2219	4822 124 23052		100uF 20% 16V	
2220	5322 121 42386		100nF 5% 63V	
2221	5322 121 42386		100nF 5% 63V	
2222	2020 554 90173	⚠	2,2nF 20% 250V	
2223	4822 126 13193		4,7nF 10% 63V	
2224	3198 017 34730		47nF 16V	
2225	2238 586 59812		100nF +80/-20% 50V	
2226	4822 124 40255		100uF 20% 63V	
2227	5322 126 11583		10nF 10% 50V	
2228	5322 126 11583		10nF 10% 50V	
2229	4822 121 43526		47nF 5% 250V	
2231	2222 338 22224	⚠	220nF 20% 275V	/22/25
2232	2222 336 19106	⚠	22nF 20% 275V	

RESISTORS

3200	4822 053 21106	⚠	10M 5% 0,5W	/37
3201	4822 116 52283		4k7 5% 0,5W	
3202	4822 116 52276		3k9 5% 0,5W	
3204	4822 116 52228		680R 5% 0,5W	
3211	4822 052 10478	⚠	4R7 5% 0,33W	
3212	4822 050 23303		33k 1% 0,6W	
3214	4822 117 12925		47k 1% 0,063W	
3215	4822 052 10109	⚠	10R 5% 0,33W	
3217	4822 117 12925		47k 1% 0,063W	
3219	4822 116 52228		680R 5% 0,5W	
3220	4822 051 30105		1M 5% 0,062W	
3221	4822 051 30222		2k2 5% 0,062W	
3222	4822 051 30471		470R 5% 0,062W	
3223	4822 051 30103		10k 5% 0,062W	
3224	4822 117 13632		100k 1% 0,62W	
3225	4822 051 30475		4M7 5% 0,062W	
3226	4822 051 30331		330R 5% 0,062W	
3227	4822 117 13632		100k 1% 0,62W	
3228	4822 051 30472		4k7 5% 0,062W	
3229	4822 051 30472		4k7 5% 0,062W	
3230	4822 051 30333		33k 5% 0,062W	
3231	4822 052 10101	⚠	100R 5% 0,33W	
3232	4822 053 21225	⚠	2M2 5% 0,5W	
3233	4822 051 30333		33k 5% 0,062W	

COILS & FILTERS

5203	2422 549 45157	⚠	TRAFO STANDBY 3A1631N	
5204	4822 157 53473		Coil 1000uH 10%	
5205	4822 157 53473		Coil 1000uH 10%	
5206	4822 157 11228		Coil 100uH 5%	
5220	4822 157 11832	⚠	FIL MAINS 400uH 3A	/22/25

DIODES

6200	4822 130 31878	⚠	1N4003G
6200	5322 130 80686	⚠	1N5392
6201	4822 130 31878	⚠	1N4003G
6201	5322 130 80686	⚠	1N5392
6202	4822 130 11139	⚠	GBU8D
6203	4822 130 30621		1N4148
6204	4822 130 34382		BZX79-B8V2
6206	4822 130 31878		1N4003G
6207	4822 130 34142		BZX79-C33
6210	4822 130 30621		1N4148
6213	4822 130 30621		1N4148
6214	4822 130 30621		1N4148
6215	4822 130 30621		1N4148
6216	4822 130 30621		1N4148
6217	4822 130 30621		1N4148
6218	4822 130 30621		1N4148
6219	4822 130 34173		BZX79-C5V6
6220	4822 130 31878		1N4003G
6221	4822 130 31878		1N4003G
6222	4822 130 31878		1N4003G
6223	4822 130 31878		1N4003G
6224	4822 130 31878		1N4003G
6225	4822 130 30621		1N4148
6226	4822 130 34145		BZX79-C39
6227	4822 130 30621		1N4148
6228	4822 130 30621		1N4148
6229	4822 130 30621		1N4148
6230	4822 130 30621		1N4148
6231	4822 130 30621		1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7200	4822 130 40917	BD238

ELECTRICAL PARTS LIST - MAINS BOARD

TRANSISTORS & INTEGRATED CIRCUITS

7202	4822 130 42804	BC817-25
7203	4822 130 40855	BC337-40
7204	4822 130 60373	BC857B
7205	5322 130 60159	BC847B
7206	4822 130 60373	BC857B

Note : Only the parts mentioned in this list are normal service spare parts.

ETF8 TAPE MODULE

TABLE OF CONTENTS

Connector assignment 9-1
Tape Module Wiring 9-2
Tape Mechanism electronics 9-2
Tape adjustment / Check Table 9-3
HEF4094BT Functional Block & Application Logic Table ... 9-3
ETF8 Board layouts - Components & Chips 9-4
ETF8 Circuit diagram 9-5
Exploded Views & mechanical parts list 9-6
Electrical parts list 9-8

CONNECTORS ASSIGNMENTS:

CONNECTOR 1701			INTERCONNECTION TO AF BOARD
○	1	REC-L	Record input left
○	2	REC-R	Record input right
○	3	GND A	AF Ground
○	4	TAPE-L	Playback output left
○	5	+12V	D.C. supply (+12V) for AF electronics
○	6	TAPE-R	Playback output right
○	7	-CMOS	Negative d.c. supply (-9V) for controlling JFET J111

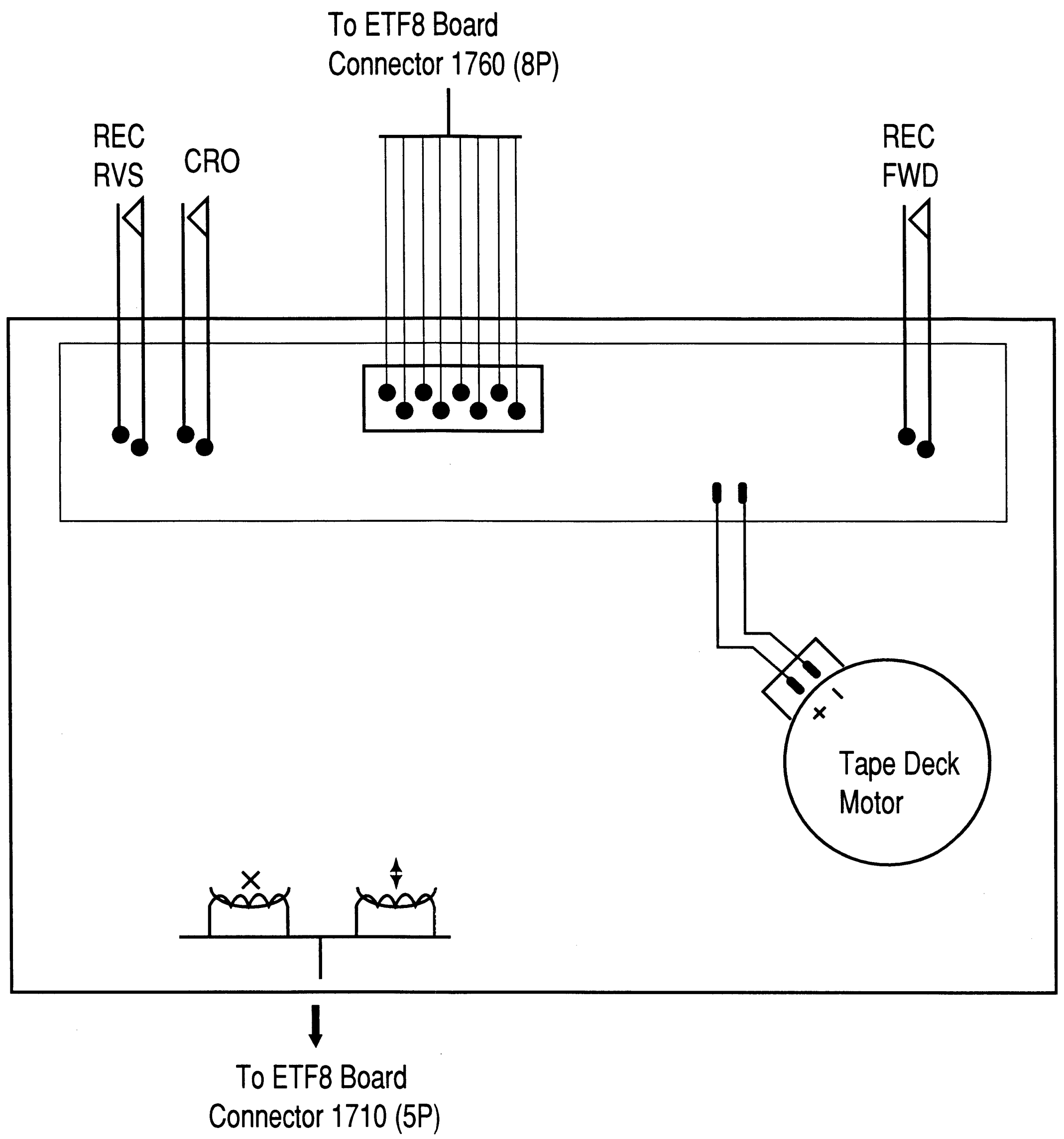
CONNECTOR 1703			INTERCONNECTION TO AF BOARD
○	1	GND M	Motor Ground
○	2	+MOTOR	D.C. supply (+12V) for tape deck motor & solenoid

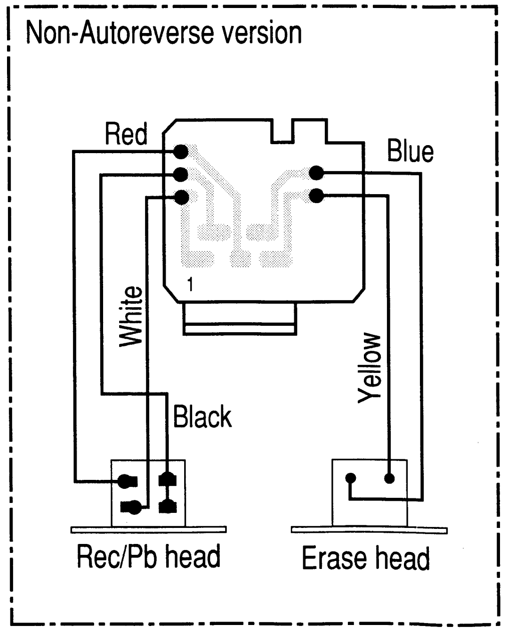
CONNECTOR 1706			INTERCONNECTION TO FRONT BOARD
○	1	CR_IN	Deck sensing Chrome Tape
○	2	AD1	Deck sensing switches output voltage / Deck EOT
○	3	+5V	DC supply (+5V) for deck status ADC network (ref to microprocessor's supply)
○	4	GND _P	Control & Oscillator Ground
○	5	CLK	HEF4094BT shift register Clock line
○	6	DATA	HEF4094BT shift register Data line
○	7	STROBE	HEF4094BT shift register Strobe line

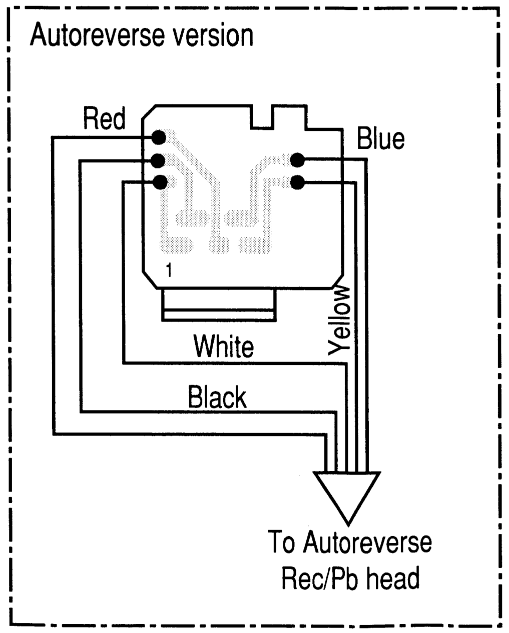
CONNECTOR 1710			TAPE HEAD CONNECTIONS
○	1	GND A	Erase Head ground
○	2	ERASE HEAD	Erase Head
○	3	R/P HD Rch	R/P Head right channel positive
○	4	Common	Pb Head return ground shield
○	5	R/P HD Lch	R/P Head left channel positive

CONNECTOR 1760			DECK CONTROL INTERFACE
○	1	Vcc 12V	Deck / Motor supply
○	2	PHOTO	Photo sensor output (tape movement indication)
○	3	GND_M	Deck / Motor ground
○	4	MODE	Mode switch (head engagement)
○	5	Sol_supply	Solenoid supply
○	6	CR_IN	Chrome tape detection switch
○	7	REC FWD	Record tab protection status switch (forward)
○	8	REC REW	Record tab protection status switch (reverse)

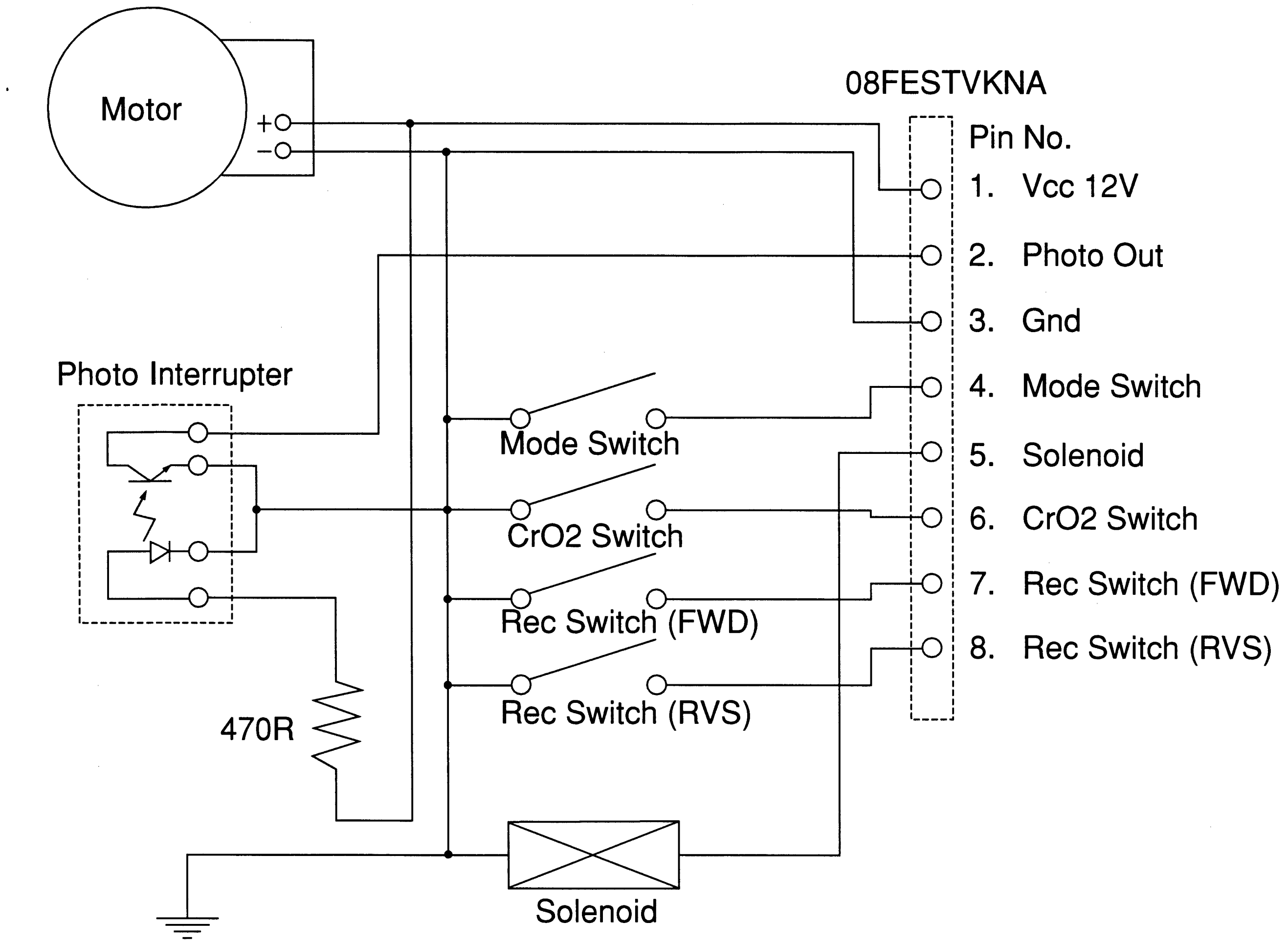
TAPE DECK WIRING


To ETF8 Board
Connector 1760 (8P)
REC
RVS
CRO
REC
FWD
+
−
Tape Deck
Motor
To ETF8 Board
Connector 1710 (5P)


Non-Autoreverse version
Red
Blue
1
White
Yellow
Black
Rec/Pb head
Erase head


Autoreverse version
Red
Blue
1
White
Yellow
Black
To Autoreverse
Rec/Pb head

TAPE MECHANISM ELECTRONICS


Motor
+
−
08FESTVKNA
Pin No.
1. Vcc 12V
2. Photo Out
3. Gnd
4. Mode Switch
5. Solenoid
6. CrO2 Switch
7. Rec Switch (FWD)
8. Rec Switch (RVS)
Photo Interrupter
Mode Switch
CrO2 Switch
Rec Switch (FWD)
Rec Switch (RVS)
470R
Solenoid

TAPE ADJUSTMENT & CHECK TABLE

	TEST CASSETTE	RECORDER MODE	MEASURE ON	READ ON	ADJUST	
					with	to
MOTOR SPEED	SBC420 3150Hz	PLAY	◇1 or ◇2 LEFT RIGHT	frequency counter	check	3150Hz +/- 2%
WOW & FLUTTER	SBC420 3150Hz	PLAY		W&F-meter	check	< 0.4 % DIN
ADJUST AZIMUTH	SBC420 10kHz	PLAY FWD		mV-meter	left hand screw	max. output level & left=right
		PLAY REV ^			right hand screw	
PLAYBACK FREQ. RESPONSE	SBC420	PLAY		mV-meter	check	limits see fig. 1 *
CHECK RECORD/PLAYBACK FREQUENCY AND DISTORTION						
Inject 8.85mV signals 100Hz, 250Hz, 1kHz, 10kHz, 12.5kHz via ◇3 or ◇4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	◇1 or ◇2 LEFT RIGHT	mV-meter	check	limits see fig. 2 *
Inject 1kHz 28mV via ◇3 or ◇4	SBC419A or SBC420	RECORD				
	RECORDED CASSETTE	PLAY	◇1 or ◇2 LEFT RIGHT	THD-meter	check	< 3% *

SBC419A : 4822 397 30069
SBC420 : 4822 397 30071

^ For Auto-reverse version only
* If high frequencies are not within limits, decrease bias and re-measure.
If distortion is too high, increase bias and re-meaure

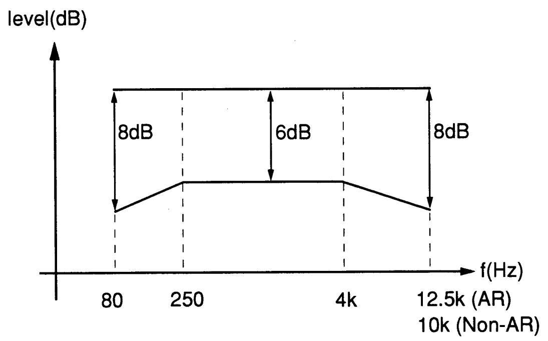


figure. 1

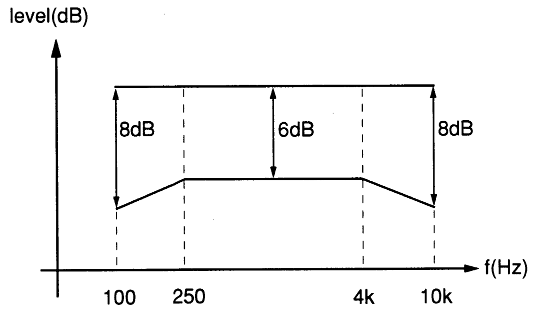
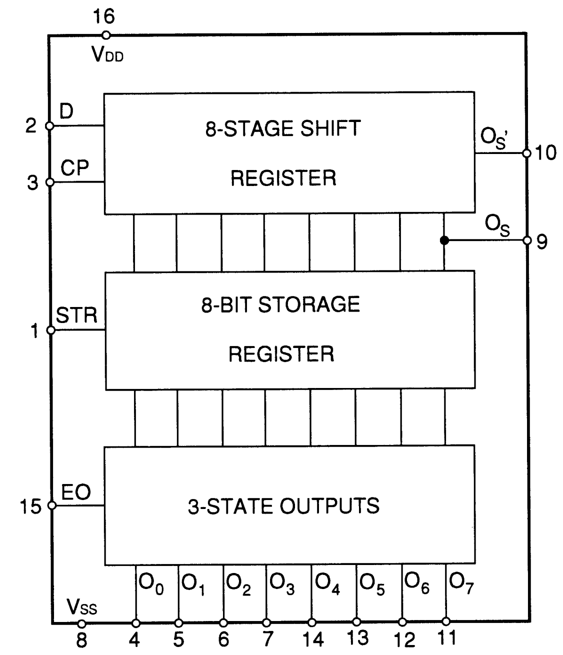


figure. 2

HEF4094BT FUNCTIONAL BLOCK DIAGRAM



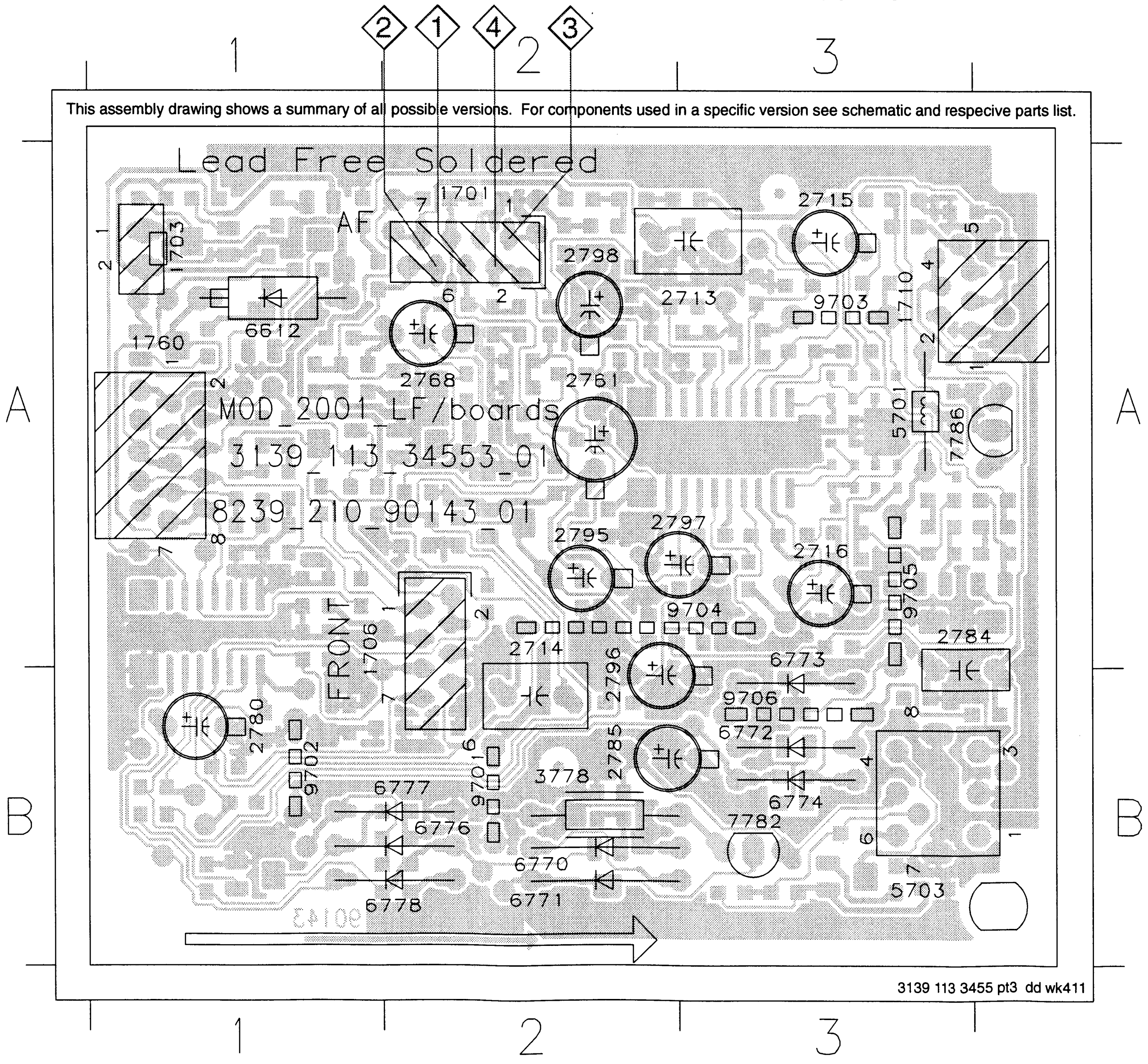
AF Control Logic State Table

State of Module	Control lines from HEF4094BT							
	O_0	O_1	O_2	O_3	O_4	O_5	O_6	O_7
	CR_SEL	REC	BIAS_OFF	CR_BIAS		SOL	MUTE_OFF	MOT
Stop	0	0	1	X	Not in used	Deck Mechanism Timing	0	0
Playback (Ferro)	0	0	1	0			1	1
Playback (Chrome)	1	0	1	1			1	1
Record (Ferro)	0	1	0	0			0	1
Record (Chrome)	1	1	0	1			0	1
FWD	0	0	1	X			0	1
REW	0	0	1	X			0	1

Note: 0 = Logic Low
1 = Logic High
X = Not applicable

COMPONENT LAYOUT

1701	A2	2715	A3	2795	A2	6612	A1	6777	B2	9704	A3
1703	A1	2716	A3	2796	B2	6770	B2	6778	B2	9705	A3
1706	A1	2761	A2	2797	A2	6771	B2	7782	B3	9706	B3
1710	A3	2768	A2	2798	A2	6772	B3	7786	A3		
1760	A1	2780	B1	3778	B2	6773	A3	9701	B2		
2713	A3	2784	A3	5701	A3	6774	B3	9702	B1		
2714	A2	2785	B2	5703	B3	6776	B2	9703	A3		

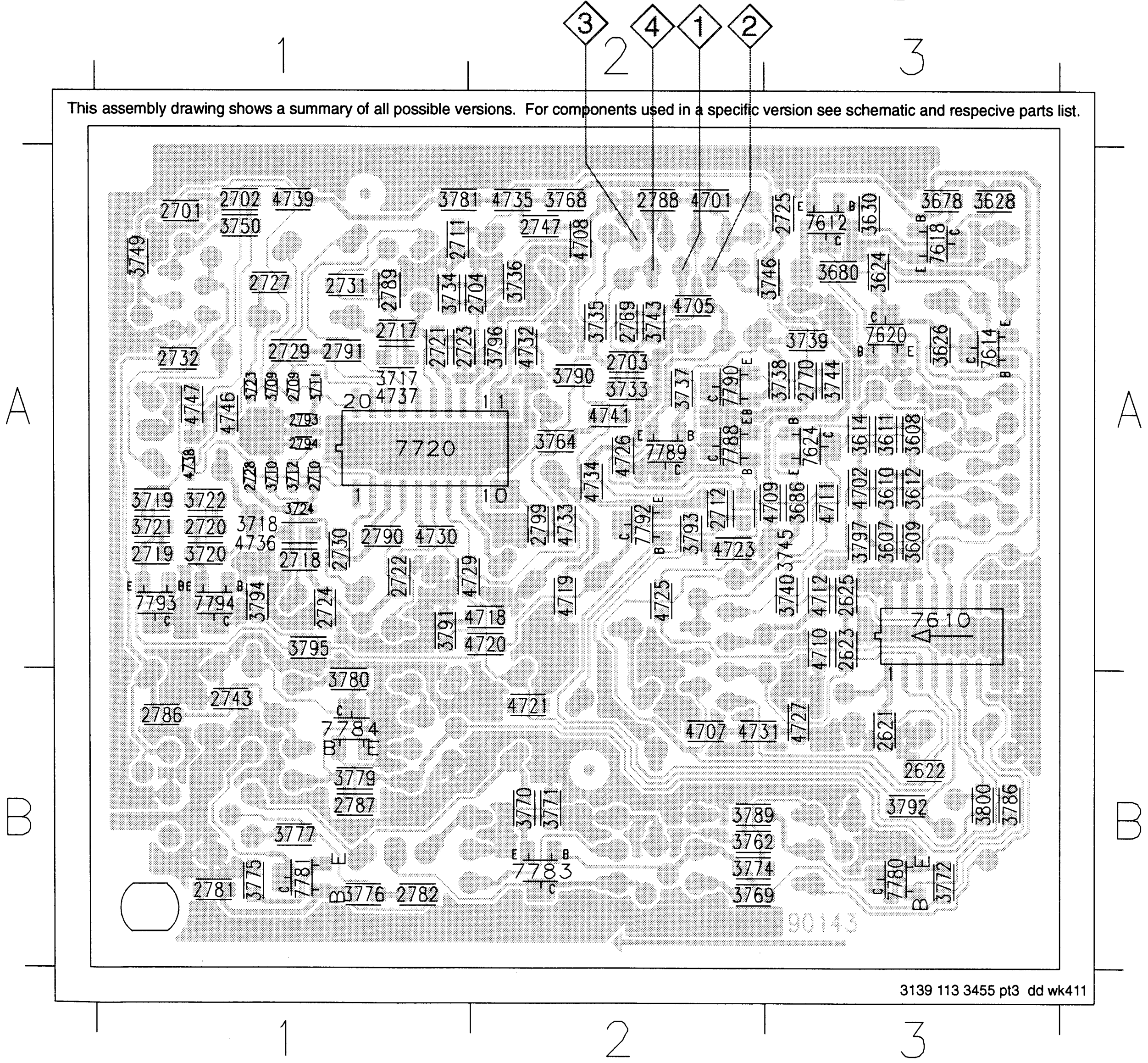


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic and respecive parts list.

②
①
④
③
1
2
3
A
B
Lead Free Soldered
AF
1701
MOD_2001_LF/boards
3139_113_34553_01
8239_210_90143_01
FRONT
1706
1703
1760
6612
2768
2798
2713
2715
9703
1710
5701
7786
2761
2795
2797
2716
9704
9705
2714
2796
6773
9706
2784
2780
9702
9701
6777
6776
3778
2785
6772
6774
7782
6770
6771
6778
5703
90143
3139 113 3455 pt3 dd wk411

CHIP LAYOUT

2621	B3	2732	A1	3630	A3	3745	A3	3796	A2	4735	A2
2622	B3	2743	B1	3678	A3	3746	A3	3797	A3	4736	A1
2623	A3	2747	A2	3680	A3	3749	A1	3800	B3	4737	A1
2625	A3	2769	A2	3686	A3	3750	A1	4701	A2	4738	A1
2701	A1	2770	A3	3709	A1	3762	B2	4702	A3	4739	A1
2702	A1	2781	B1	3710	A1	3764	A2	4705	A2	4741	A2
2703	A2	2782	B1	3711	A1	3768	A2	4707	B2	4746	A1
2704	A2	2786	B1	3712	A1	3769	B2	4708	A2	4747	A1
2709	A1	2787	B1	3717	A1	3770	B2	4709	A3	7610	A3
2710	A1	2788	A2	3718	A1	3771	B2	4710	A3	7612	A3
2711	A1	2789	A1	3719	A1	3772	B3	4711	A3	7614	A3
2712	A2	2790	A1	3720	A1	3774	B2	4712	A3	7618	A3
2717	A1	2791	A1	3721	A1	3775	B1	4718	A2	7620	A3
2718	A1	2793	A1	3722	A1	3776	B1	4719	A2	7624	A3
2719	A1	2794	A1	3723	A1	3777	B1	4720	A2	7720	A1
2720	A1	2799	A2	3724	A1	3779	B1	4721	B2	7780	B3
2721	A1	3607	A3	3733	A2	3780	B1	4723	A2	7781	B1
2722	A1	3608	A3	3734	A1	3781	A1	4725	A2	7783	B2
2723	A1	3609	A3	3735	A2	3786	B3	4726	A2	7784	B1
2724	A1	3610	A3	3736	A2	3789	B2	4727	B3	7788	A2
2725	A3	3611	A3	3737	A2	3790	A2	4729	A1	7789	A2
2727	A1	3612	A3	3738	A3	3791	A1	4730	A1	7790	A2
2728	A1	3614	A3	3739	A3	3792	B3	4731	B2	7792	A2
2729	A1	3624	A3	3740	A3	3793	A2	4732	A2	7793	A1
2730	A1	3626	A3	3743	A2	3794	A1	4733	A2	7794	A1
2731	A1	3628	A3	3744	A3	3795	A1	4734	A2		



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic and respecive parts list.

③
④
①
②
1
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A
B
7720
7610
7612
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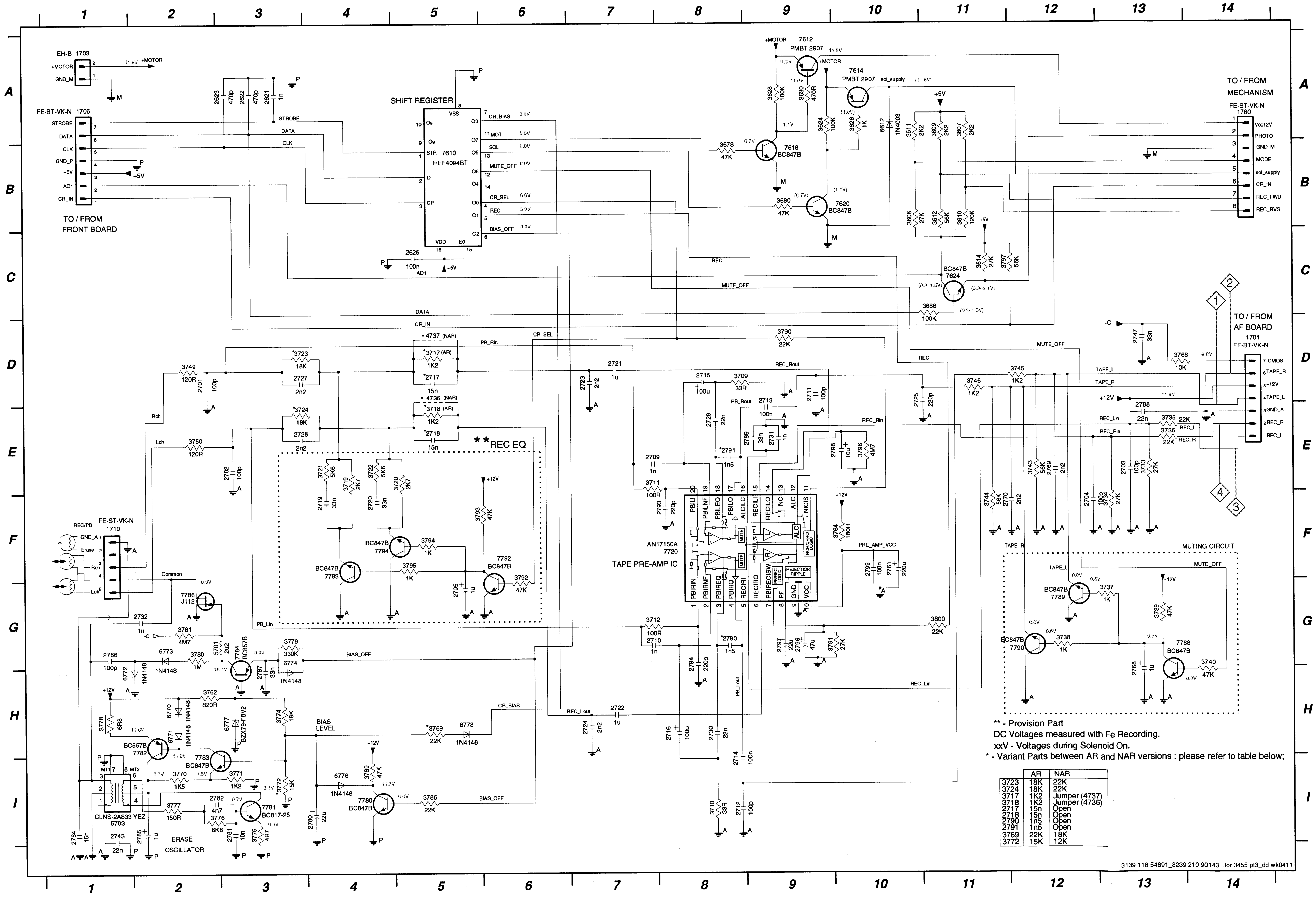
3139 113 3455 pt3 dd wk411

CIRCUIT DIAGRAM


EH-B 1703
+MOTOR
GND_M
11.9V +MOTOR
FE-BT-VK-N 1706
STROBE
DATA
CLK
GND_P
+5V
AD1
CR_IN
TO / FROM
FRONT BOARD
SHIFT REGISTER
7610
HEF4094BT
CR_BIAS
MOT
SOL
MUTE_OFF
CR_SEL
REC
BIAS_OFF
2625
100n
+MOTOR 7612
PMBT 2907
7614
PMBT 2907
sol_supply
7618
BC847B
7620
BC847B
BC847B
7624
6612
1N4003
TO / FROM
MECHANISM
FE-ST-VK-N
1760
Vcc12V
PHOTO
GND_M
MODE
sol_supply
CR_IN
REC_FWD
REC_RVS
TO / FROM
AF BOARD
1701
FE-BT-VK-N
7-CMOS
6TAPE_R
5+12V
4TAPE_L
3GND_A
2REC_R
1REC_L
PB_Rin
PB_Lin
REC_Rout
REC_Lout
REC_Rin
REC_Lin
REC EQ
AN17150A
7720
TAPE PRE-AMP IC
PRE_AMP_VCC
REC/PB
FE-ST-VK-N
1710
GND_A
Erase
Rch
Lch
Common
7786
J112
BC847B
7794
BC847B
7793
7792
BC847B
7784
BC557B
BIAS LEVEL
BC557B
7782
7783
BC847B
7780
BC847B
7781
BC817-25
CLNS-2A833 YEZ
5703
ERASE
OSCILLATOR
MUTING CIRCUIT
BC847B
7789
BC847B
7790
7788
BC847B

** - Provision Part

DC Voltages measured with Fe Recording.

xxV - Voltages during Solenoid On.

* - Variant Parts between AR and NAR versions : please refer to table below;

	AR	NAR
3723	18K	22K
3724	18K	22K
3717	1K2	Jumper (4737)
3718	1K2	Jumper (4736)
2717	15n	Open
2718	15n	Open
2790	1n5	Open
2791	1n5	Open
3769	22K	18K
3772	15K	12K

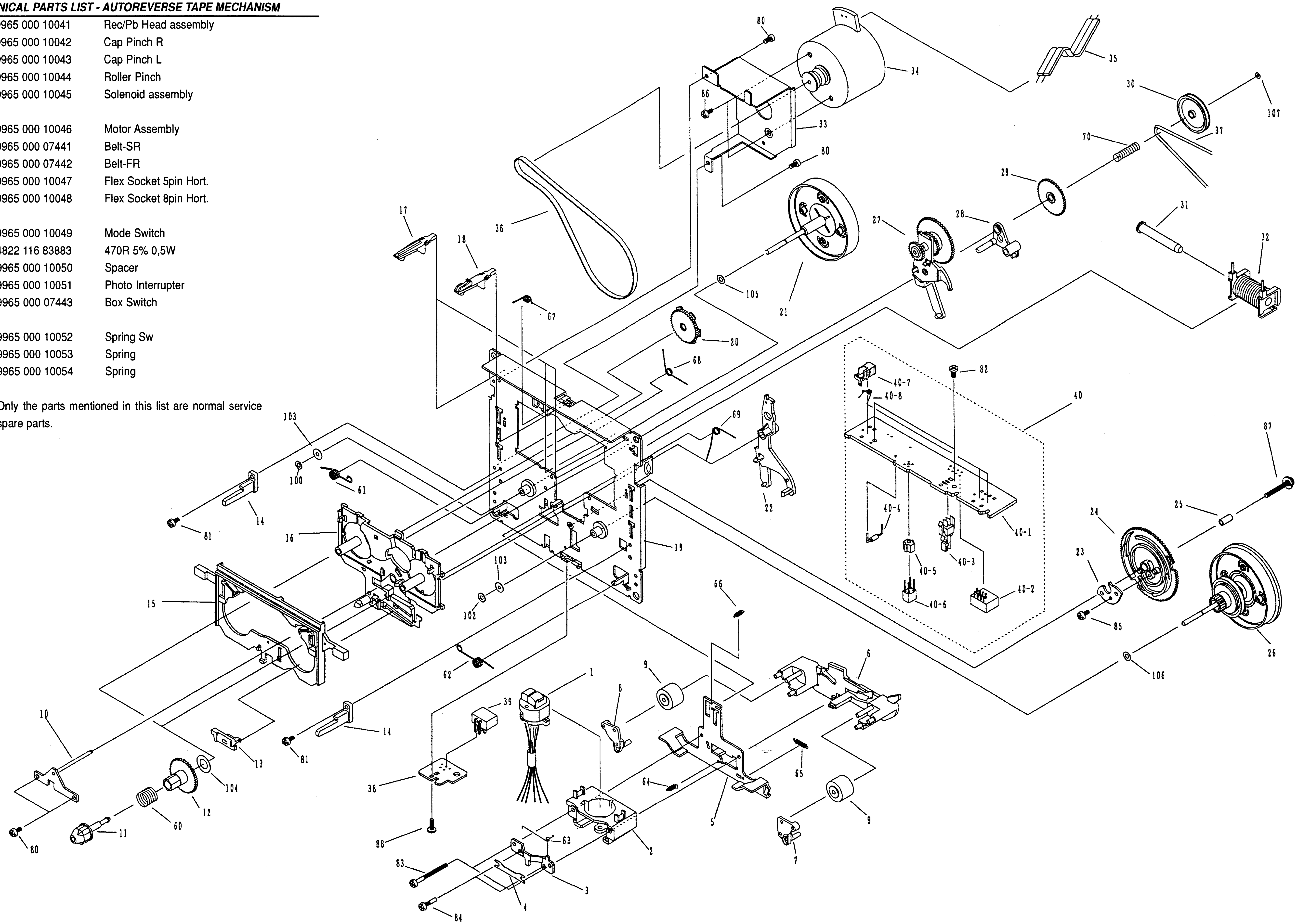
1701	D14
1703	A1
1706	A1
1710	F1
1760	A14
2621	A3
2622	A3
2623	A3
2625	C5
2701	D2
2702	E3
2703	E13
2704	F12
2709	E7
2710	G7
2711	D9
2712	I8
2713	D9
2714	I8
2715	D8
2716	H8
2717	D5
2718	E5
2719	F4
2720	F4
2721	D7
2722	H7
2723	D7
2724	H7
2725	D10
2727	D3
2728	E3
2729	E8
2730	H8
2731	E9
2732	G2
2743	I1
2747	D13
2761	F10
2768	H13
2769	E12
2770	F11
2780	I4
2781	I3
2782	I2
2784	I1
2785	I2
2786	G1
2787	H3
2788	E13
2789	E9
2790	G8
2791	E8
2793	F8
2794	G8
2795	G5
2796	G9
2797	G9
2798	E9
2799	F10
3607	A11
3608	B10
3609	A11
3610	B11
3611	A10
3612	B11
3614	C11
3624	A9
3626	A10
3628	A9
3630	A9
3678	B8
3680	B9
3686	C11
3709	D8
3710	I8
3711	E7
3712	G7
3717	D5
3718	E5
3719	E4
3720	E5
3721	E4
3722	E4
3723	D3
3724	E3
3733	E13
3734	F13
3735	E13
3736	E13
3737	G13
3738	G12
3739	G13
3740	G14
3743	E12
3744	F11
3745	D12
3746	D11
3749	D2
3750	E2
3762	H2
3764	F10
3768	D13
3769	H5
3770	I2
3771	I3
3772	I3
3774	H3
3775	I3
3776	I2
3777	I2
3778	H1
3779	G3
3780	G2
3781	G2
3786	I5
3789	I4
3790	D9
3791	G9
3792	F6
3793	F5
3794	F5
3795	F5
3796	E10
3797	C11
3800	G11
4736	D5
4737	D5
5701	G2
5703	I1
6612	A10
6770	H2
6771	H2
6772	H1
6773	G2
6774	G3
6776	I4
6777	H3
6778	H5
7610	B5
7612	A9
7614	A10
7618	B9
7620	B10
7624	C11
7720	F8
7780	I4
7781	I3
7782	H2
7783	I2
7784	G3
7786	G2
7788	G14
7789	G12
7790	G12
7792	F6
7793	F4
7794	F4

AUTOREVERSE (AR) TAPE MECHANISM

MECHANICAL PARTS LIST - AUTOREVERSE TAPE MECHANISM

1	9965 000 10041	Rec/Pb Head assembly
7	9965 000 10042	Cap Pinch R
8	9965 000 10043	Cap Pinch L
9	9965 000 10044	Roller Pinch
32	9965 000 10045	Solenoid assembly
34	9965 000 10046	Motor Assembly
36	9965 000 07441	Belt-SR
37	9965 000 07442	Belt-FR
39	9965 000 10047	Flex Socket 5pin Hort.
40-2	9965 000 10048	Flex Socket 8pin Hort.
40-3	9965 000 10049	Mode Switch
40-4	4822 116 83883	470R 5% 0,5W
40-5	9965 000 10050	Spacer
40-6	9965 000 10051	Photo Interrupter
40-7	9965 000 07443	Box Switch
40-8	9965 000 10052	Spring Sw
61	9965 000 10053	Spring
62	9965 000 10054	Spring

Note: Only the parts mentioned in this list are normal service spare parts.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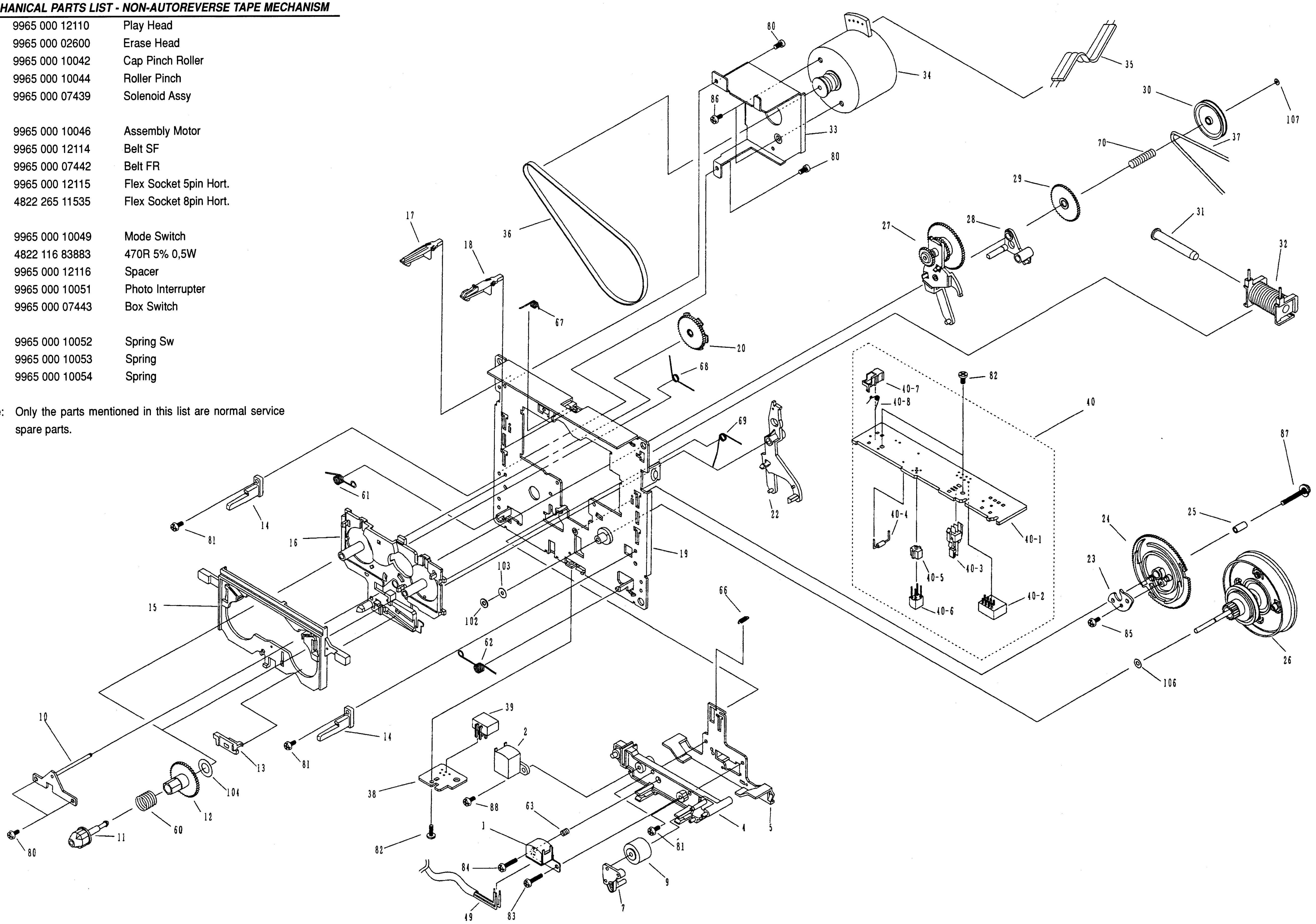
NON-AUTOREVERSE (NAR) TAPE MECHANISM

MECHANICAL PARTS LIST - NON-AUTOREVERSE TAPE MECHANISM

1	9965 000 12110	Play Head
2	9965 000 02600	Erase Head
7	9965 000 10042	Cap Pinch Roller
9	9965 000 10044	Roller Pinch
32	9965 000 07439	Solenoid Assy
34	9965 000 10046	Assembly Motor
36	9965 000 12114	Belt SF
37	9965 000 07442	Belt FR
39	9965 000 12115	Flex Socket 5pin Hort.
40-2	4822 265 11535	Flex Socket 8pin Hort.
40-3	9965 000 10049	Mode Switch
40-4	4822 116 83883	470R 5% 0,5W
40-5	9965 000 12116	Spacer
40-6	9965 000 10051	Photo Interrupter
40-7	9965 000 07443	Box Switch
40-8	9965 000 10052	Spring Sw
61	9965 000 10053	Spring
62	9965 000 10054	Spring

Note: Only the parts mentioned in this list are normal service spare parts.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40-3
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40-2
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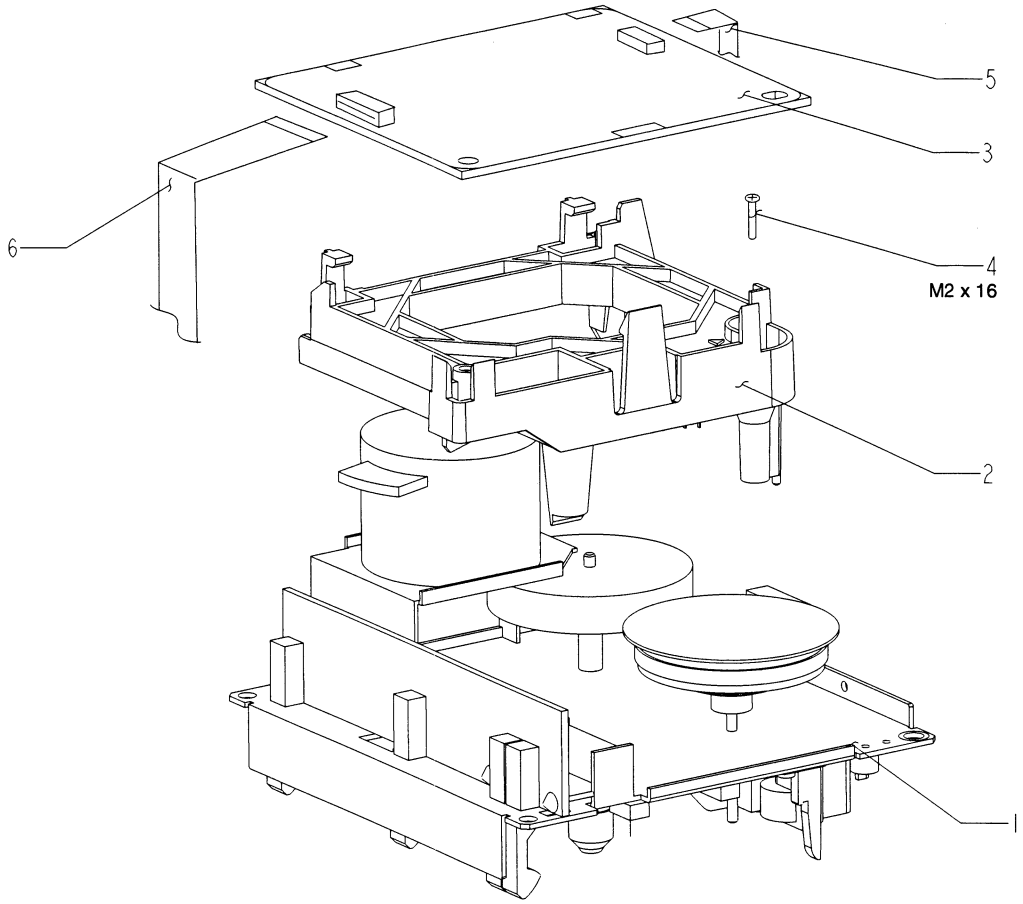
TAPE MODULE EXPLODED VIEW



ETF8 SD Exploded view ....78730 dd wk204

MECHANICAL PARTS LIST - TAPE MODULE

1	3139 118 78740	AR Tape Mech. CRL4438
1	3139 118 79220	Non-AR Tape Mech. CFL4217
5	3139 110 35580	Flex Cable 5pin 40mm AD
6	3139 110 35590	Flex Cable 8pin 48mm AD

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - ETF8 BOARD

MISCELLANEOUS

1701	4822 267 10953	Flex Socket 7pin Vert.
1706	4822 267 10953	Flex Socket 7pin Vert.
1710	4822 267 10958	Flex Socket 5pin Hort.
1760	4822 265 11535	Flex Socket 8pin Hort.

CAPACITORS

2621	5322 126 11578	1nF 10% 50V	
2621	5322 122 31647	1nF 10% 63V	
2622	4822 126 13881	470pF 5% 50V	
2622	5322 122 32268	470pF 5% 50V	
2623	4822 126 13881	470pF 5% 50V	
2623	5322 122 32268	470pF 5% 50V	
2625	4822 126 14305	100nF 10% 16V	
2625	2238 586 59812	100nF +80/-20% 50V	
2701	4822 122 31765	100pF 2% 63V	
2701	5322 122 32531	100pF 5% 50V	
2702	4822 122 31765	100pF 2% 63V	
2702	5322 122 32531	100pF 5% 50V	
2703	4822 122 31765	100pF 2% 63V	
2703	5322 122 32531	100pF 5% 50V	
2704	4822 122 31765	100pF 2% 63V	
2704	5322 122 32531	100pF 5% 50V	
2709	5322 126 11578	1nF 10% 50V	
2710	5322 126 11578	1nF 10% 50V	
2711	4822 122 31765	100pF 2% 63V	
2711	5322 122 32531	100pF 5% 50V	
2712	4822 122 31765	100pF 2% 63V	
2712	5322 122 32531	100pF 5% 50V	
2713	5322 121 42386	100nF 5% 63V	
2714	5322 121 42386	100nF 5% 63V	
2715	4822 124 41584	100uF 20% 10V	
2716	4822 124 41584	100uF 20% 10V	
2717	3198 017 31530	15nF 50V	AR
2717	4822 126 13188	15nF 5% 63V	AR
2718	3198 017 31530	15nF 50V	AR
2718	4822 126 13188	15nF 5% 63V	AR
2721	3198 017 41050	1uF 10V	
2721	4822 126 14043	1uF +80/-20% 16V	
2722	3198 017 41050	1uF 10V	
2722	4822 126 14043	1uF +80/-20% 16V	
2723	4822 126 14238	2,2nF 50V	
2724	4822 126 14238	2,2nF 50V	
2725	4822 126 13883	220pF 5% 50V	
2727	4822 126 14238	2,2nF 50V	
2728	4822 126 14238	2,2nF 50V	
2729	4822 126 14494	22nF 10% 25V	
2729	2238 916 15641	22nF 10% 25V	
2730	4822 126 14494	22nF 10% 25V	
2730	2238 916 15641	22nF 10% 25V	
2731	5322 126 11578	1nF 10% 50V	
2731	5322 122 31647	1nF 10% 63V	
2732	3198 017 41050	1uF 10V	
2732	4822 126 14043	1uF +80/-20% 16V	
2743	4822 126 14494	22nF 10% 25V	
2743	2238 916 15641	22nF 10% 25V	
2747	4822 126 14549	33nF 16V	
2761	4822 124 40196	220uF 20% 16V	
2768	4822 124 40756	1uF 20% 100V	
2769	4822 126 14238	2,2nF 50V	
2770	4822 126 14238	2,2nF 50V	
2780	4822 124 81151	22uF 50V	
2781	5322 126 11583	10nF 10% 50V	
2781	4822 122 33177	10nF 20% 50V	
2782	4822 126 13193	4,7nF 10% 63V	
2784	4822 121 51305	15nF 10% 50V	
2785	4822 124 21913	1uF 20% 63V	
2786	4822 122 31765	100pF 2% 63V	
2786	5322 122 32531	100pF 5% 50V	
2787	4822 126 14549	33nF 16V	
2788	4822 126 14494	22nF 10% 25V	
2788	2238 916 15641	22nF 10% 25V	
2789	4822 126 14549	33nF 16V	
2790	4822 126 14247	1,5nF 50V	AR
2791	4822 126 14247	1,5nF 50V	AR
2793	4822 126 13883	220pF 5% 50V	
2794	4822 126 13883	220pF 5% 50V	
2796	4822 124 40433	47uF 20% 25V	
2797	4822 124 81151	22uF 50V	
2798	4822 124 21732	10uF 20% 25V	
2799	4822 126 14305	100nF 10% 16V	
2799	2238 586 59812	100nF +80/-20% 50V	

RESISTORS

3607	4822 051 30222	2k2 5% 0,062W
3607	4822 117 11449	2k2 5% 0,1W
3608	4822 051 30273	27k 5% 0,062W
3609	4822 051 30222	2k2 5% 0,062W
3609	4822 117 11449	2k2 5% 0,1W
3610	4822 051 20124	120k 5% 0,1W
3611	4822 051 30222	2k2 5% 0,062W
3611	4822 117 11449	2k2 5% 0,1W
3612	4822 051 30563	56k 5% 0,062W
3614	4822 051 30273	27k 5% 0,062W
3624	4822 117 13632	100k 1% 0,062W
3624	4822 117 10837	100k 1% 0,1W
3626	4822 051 30102	1k 5% 0,062W
3628	4822 117 13632	100k 1% 0,062W
3628	4822 117 10837	100k 1% 0,1W
3630	4822 051 30471	470R 5% 0,062W
3678	4822 117 12925	47k 1% 0,063W
3680	4822 117 12925	47k 1% 0,063W
3686	4822 117 13632	100k 1% 0,062W
3686	4822 117 10837	100k 1% 0,1W
3709	4822 051 30339	33R 5% 0,062W

RESISTORS

3710	4822 051 30339	33R 5% 0,062W	
3711	4822 051 30101	100R 5% 0,062W	
3712	4822 051 30101	100R 5% 0,062W	
3717	4822 117 11817	1k2 1% 1/16W	AR
3717	4822 051 20122	1k2 5% 0,1W	AR
3718	4822 117 11817	1k2 1% 1/16W	AR
3718	4822 051 20122	1k2 5% 0,1W	AR
3723	4822 051 30183	18k 5% 0,062W	AR
3723	4822 051 30223	22k 5% 0,062W	Non-AR
3724	4822 051 30183	18k 5% 0,062W	AR
3724	4822 051 30223	22k 5% 0,062W	Non-AR
3733	4822 051 30273	27k 5% 0,062W	
3734	4822 051 30273	27k 5% 0,062W	
3735	4822 051 30223	22k 5% 0,062W	
3735	4822 051 20223	22k 5% 0,1W	
3736	4822 051 30223	22k 5% 0,062W	
3736	4822 051 20223	22k 5% 0,1W	
3737	4822 051 30102	1k 5% 0,062W	
3737	4822 051 10102	1k 2% 0,25W	
3738	4822 051 30102	1k 5% 0,062W	
3738	4822 051 10102	1k 2% 0,25W	
3739	4822 117 12925	47k 1% 0,063W	
3740	4822 117 12925	47k 1% 0,063W	
3743	4822 051 30563	56k 5% 0,062W	
3744	4822 051 30563	56k 5% 0,062W	
3745	4822 117 11817	1k2 1% 1/16W	
3745	4822 051 20122	1k2 5% 0,1W	
3746	4822 117 11817	1k2 1% 1/16W	
3746	4822 051 20122	1k2 5% 0,1W	
3749	4822 051 30121	120R 5% 0,062W	
3749	4822 051 20121	120R 5% 0,1W	
3750	4822 051 30121	120R 5% 0,062W	
3750	4822 051 20121	120R 5% 0,1W	
3762	4822 117 12968	820R 5% 0,62W	
3764	4822 051 30181	180R 5% 0,062W	
3764	4822 117 11448	180R 1% 0,1W	
3768	4822 051 30103	10k 5% 0,062W	
3768	4822 117 10833	10k 1% 0,1W	
3769	4822 051 30223	22k 5% 0,062W	AR
3769	4822 051 30183	18k 5% 0,062W	Non-AR
3770	4822 051 30152	1k5 5% 0,062W	
3771	4822 117 11817	1k2 1% 1/16W	
3771	4822 051 20122	1k2 5% 0,1W	
3772	4822 051 30153	15k 5% 0,062W	AR
3772	4822 051 30123	12k 5% 0,062W	Non-AR
3774	4822 051 30183	18k 5% 0,062W	
3775	4822 117 13608	4,7R 5% 0,063W	
3776	4822 051 30682	6k8 5% 0,062W	
3777	4822 051 30151	150R 5% 0,062W	
3777	4822 117 10353	150R 1% 0,1W	
3778	4822 052 10688	6R8 5% 0,33W	
3779	4822 051 30334	330k 5% 0,062W	
3780	4822 051 30105	1M 5% 0,062W	
3780	4822 051 20105	1M 5% 0,1W	
3781	4822 051 30475	4M7 5% 0,062W	
3786	4822 051 30223	22k 5% 0,062W	
3786	4822 051 20223	22k 5% 0,1W	
3789	4822 117 12925	47k 1% 0,063W	
3790	4822 051 30223	22k 5% 0,062W	
3790	4822 051 20223	22k 5% 0,1W	
3791	4822 051 30273	27k 5% 0,062W	
3796	4822 051 30475	4M7 5% 0,062W	
3797	4822 051 30563	56k 5% 0,062W	
3800	4822 051 30223	22k 5% 0,062W	
3800	4822 051 20223	22k 5% 0,1W	
4701	4822 051 30008	0R Jumper 0603	
4702	4822 051 30008	0R Jumper 0603	
4705	4822 051 30008	0R Jumper 0603	
4707	4822 051 30008	0R Jumper 0603	
4708	4822 051 30008	0R Jumper 0603	
4709	4822 051 30008	0R Jumper 0603	
4710	4822 051 30008	0R Jumper 0603	
4711	4822 051 30008	0R Jumper 0603	
4712	4822 051 30008	0R Jumper 0603	
4718	4822 051 30008	0R Jumper 0603	
4719	4822 051 30008	0R Jumper 0603	
4720	4822 051 30008	0R Jumper 0603	
4721	4822 051 30008	0R Jumper 0603	
4723	4822 051 30008	0R Jumper 0603	
4725	4822 051 30008	0R Jumper 0603	
4726	4822 051 30008	0R Jumper 0603	
4727	4822 051 30008	0R Jumper 0603	
4729	4822 051 30008	0R Jumper 0603	
4730	4822 051 30008	0R Jumper 0603	
4731	4822 051 30008	0R Jumper 0603	
4732	4822 051 30008	0R Jumper 0603	
4733	4822 051 30008	0R Jumper 0603	
4734	4822 051 30008	0R Jumper 0603	
4735	4822 051 30008	0R Jumper 0603	
4736	4822 051 30008	0R Jumper 0603	Non-AR
4737	4822 051 30008	0R Jumper 0603	Non-AR
4738	4822 051 30008	0R Jumper 0603	
4739	4822 051 30008	0R Jumper 0603	
4741	4822 051 30008	0R Jumper 0603	
4746	4822 051 30008	0R Jumper 0603	
4747	4822 051 30008	0R Jumper 0603	

COILS & FILTERS

5701	4822 157 62552	Coil 2,2uH 5%
5703	4822 156 20946	Osc Coil 100kHz

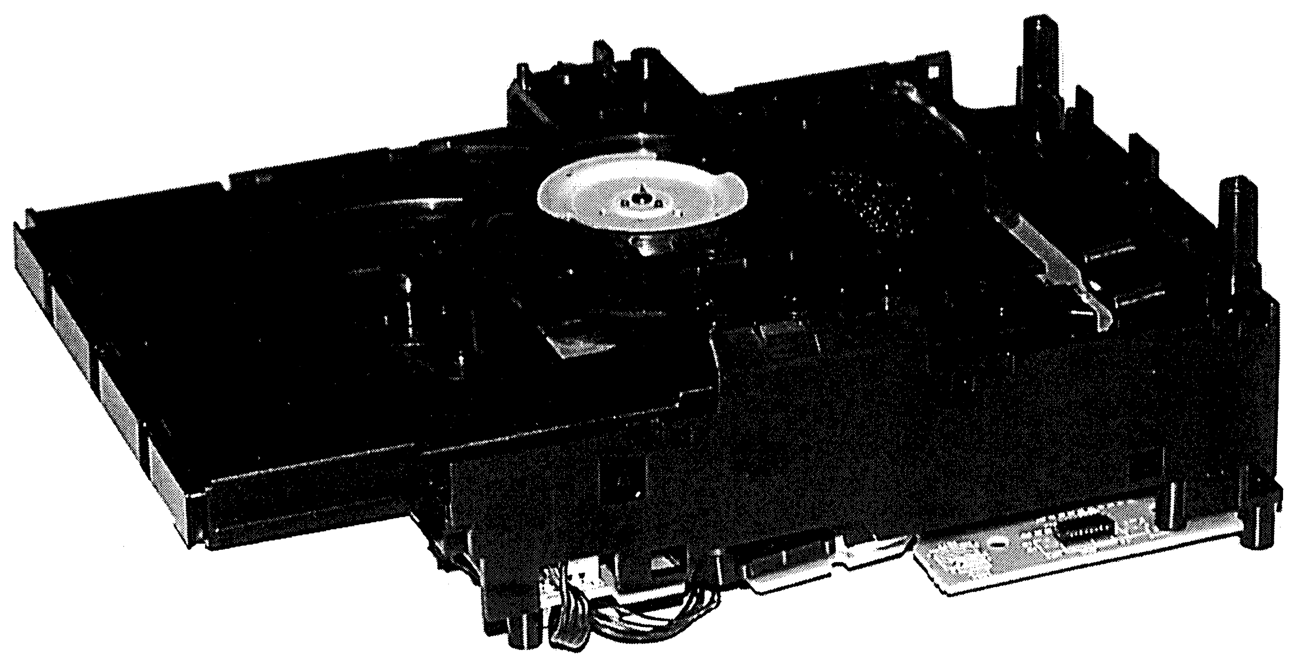
DIODES

6612	4822 130 31878	1N4003G
6770	4822 130 30621	1N4148
6771	4822 130 30621	1N4148
6772	4822 130 30621	1N4148
6773	4822 130 30621	1N4148
6774	4822 130 30621	1N4148
6776	4822 130 30621	1N4148
6777	4822 130 34382	BZX79-B8V2
6778	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUIT

7610	5322 209 11306	HEF4094BT
7612	4822 130 11201	PMBT2907
7614	4822 130 11201	PMBT2907
7618	5322 130 60159	BC847B
7620	5322 130 60159	BC847B
7624	5322 130 60159	BC847B
7720	9322 167 09668	AN17150ATA
7780	5322 130 60159	BC847B
7781	4822 130 42804	BC817-25
7782	4822 130 44568	BC557B
7783	5322 130 60159	BC847B
7784	4822 130 60373	BC857B
7786	9340 052 70126	FET SIG J112
7788	5322 130 60159	BC847B
7789	5322 130 60159	BC847B
7790	5322 130 60159	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.



Universal Loader

(Single Disc Tray Loader)

MP3 version, ICD03 PHONIC Layout stage .3

This document describes 2 versions, the version with the Mitsumi CD drive ***MCD2*** and the version with the Sanyo CD drive ***DA12***.
The CD drive used in a specific application is stated on the type plate, located on one of the side walls of the changer module.

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MP3 CD03 Board (for orientation only)..........10-10

Service hints

In case of symptom „skipping tracks“ perform following actions:

1. VERIFY THE COMPLAINT

PLAYABILITY CHECK

use CD-RW Printed Audio Disk 7104 099 96611
TR 3 (Fingerprint)
TR 8 (600µ black dot) **maximum at 01:00**

- playback of these two tracks without audible disturbance playing time for: Fingerprint ≥10seconds
  Black dot from 00:50 to 01:10
- jump forward/backward (search) within a reasonable time

2. CLEAN THE LENS

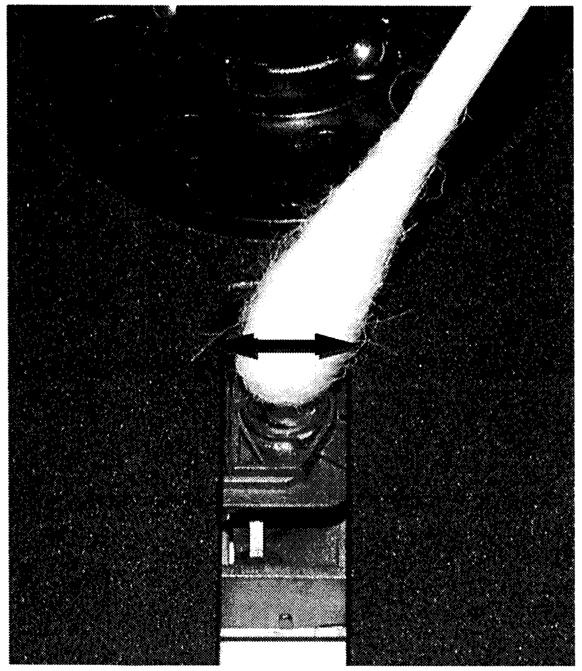
CD DRIVE – LENS CLEANING

Before touching the lens it is advised to clean the surface of the lens by blowing clean air over it in order to avoid that little particles make scratches on the lens.

Because the material of the lens is synthetic and coated with a special anti-reflectivity layer, cleaning must be done with a non-aggressive cleaning fluid. It is advised to use “Cleaning Solvent B4”, available with codenumber 4822 389 10026.

The actuator is a very precise mechanical component and may not be damaged in order to guarantee its full function. It is advised to clean the lens gently (don't press too hard) with a soft and clean cotton bud moistened with the special lens cleaner.

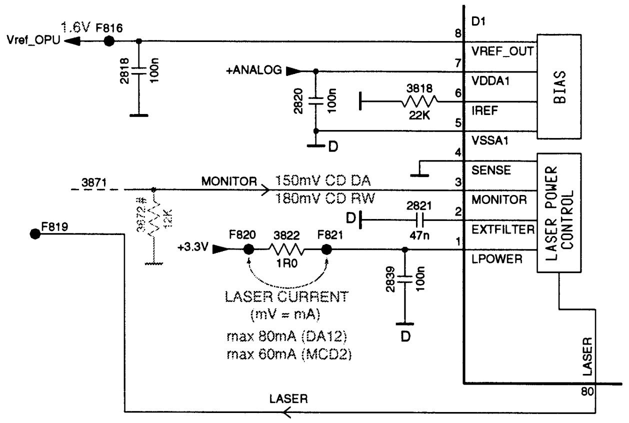
The direction of cleaning must be in the way as indicated in the picture below.



3. MEASURE THE LASER CURRENT

CD DRIVE – LASER CURRENT MEASUREMENT

The laser current can be measured as a voltage drop on resistor 3822. Typical value 50mV (MCD2 disc drive) respectively 55mV (DA12 disc drive).



If the value is higher than 60mV (MCD2 disc drive) respectively 80mV (DA12 disc drive) or the current increases just after switching the laser on - the laserdiode is most probably defective. In that case the CD drive has to be replaced.

4. GENERAL HINTS

Since the HF pre-amplifier is integrated into the new "CD18“ signal processor the well-known eye pattern signal is not available as external signal and cannot be measured anymore. Also measuring the offset voltages is not necessary because the new signal processor contains an automatic offset compensation.

However the circuitry offers some new aspects for checking the system:

- the Monitor voltage shows if the sensitivity is set correctly (attention: ESD sensitive line!):
  CD DA: 150mV
  CD RW: 180mV

- the Focus search algorithm is divided into 4 steps:
  1st step: CD DA sensitivity
  2nd step: CD DA enforced sensitivity
  3rd step: CD RW sensitivity
  4th step: CD RW enforced sensitivity

The used sensitivity can be found out by either measuring the Monitor voltage or counting the up/down movements of the OPU until focus is found.
e.g. when a normal CD DA is played back Monitor voltage should measure 150mV respectively Focus should be found within the first up/down movement of the OPU.

In case a higher sensitivity setting can be observed than defined, there are following possible reasons:
- disc scratched or dirty
- poor reflectivity of the disc - disc not conform standard
- lens of the OPU dirty
- laser power too low

Service hints

CAUTION

CHARGED CAPACITORS ON THE SERVO BOARD MAY DAMAGE THE CD DRIVE ELECTRONICS WHEN CONNECTING A NEW CD MECHANISM. THAT´S WHY, BESIDES THE SAFETY MEASURES LIKE
- ***SWITCH OFF POWER SUPPLY***
- ***ESD PROTECTION***

ADDITIONAL ACTIONS MUST BE TAKEN BY THE REPAIR TECHNICIAN.

The following steps have to be done when replacing the CD mechanism:

1. Disconnect flexfoil cable from the old CD drive
2. Put a paperclip onto the flexfoil cable to short-circuit the contacts (fig.1)
3. Remove the old CD drive
4. Remove paperclip from the flexfoil cable and connect it to the new CD drive
5. Position the new CD drive on its studs
6. Remove solder joint from the Laser unit (see below)

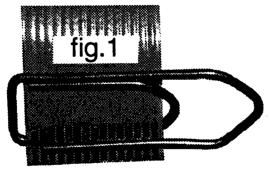
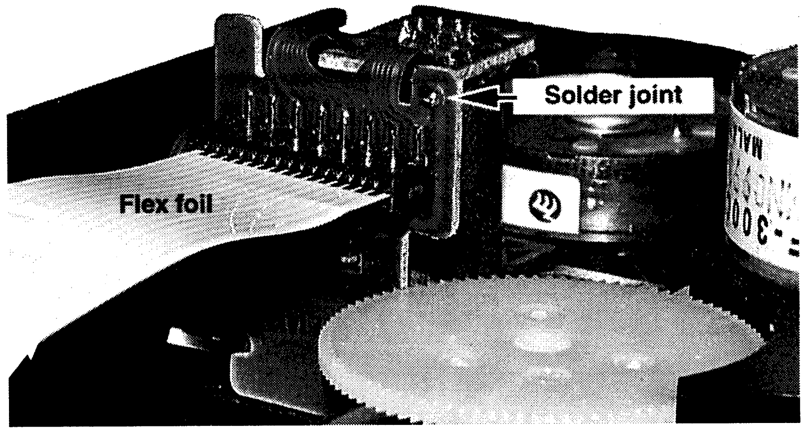


fig.1

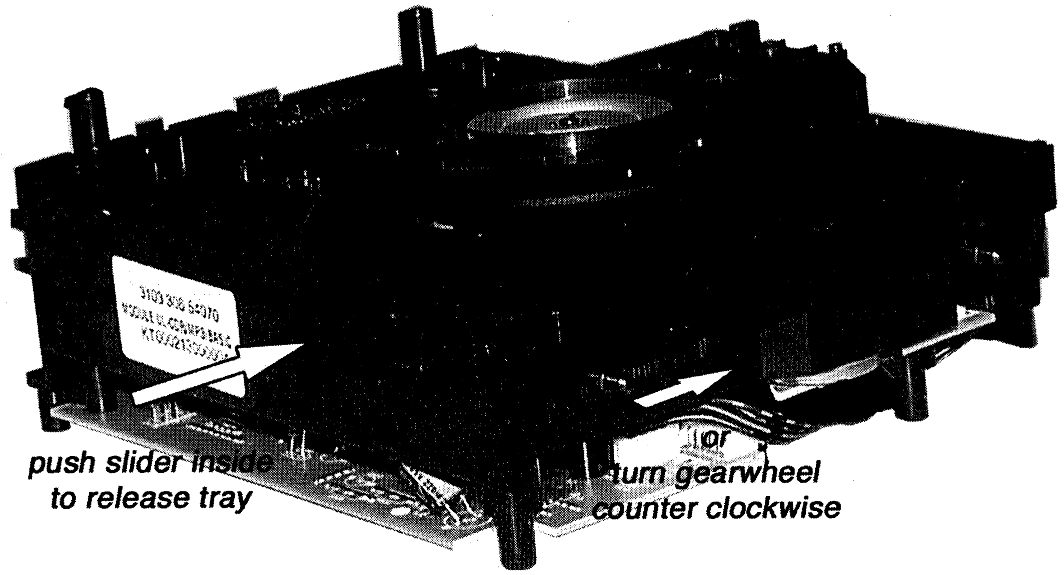
Attention: The laser diode of this CD drive is protected against ESD by a solder joint which short-circuits the laser diode to ground.
For proper functionality of the CD drive this solder joint must be removed **after** connecting the drive to the set.



Emergency open

In case of a Supply fault, the drawer can be opened manually.

1. Remove the top cover of the set to get access to the CD Module.
2. Proceed as shown in picture below.



Service hints

Dismantling of Drawer

1. Open the drawer and release 2 catches as shown in fig. 2
2. Pull drawer out.

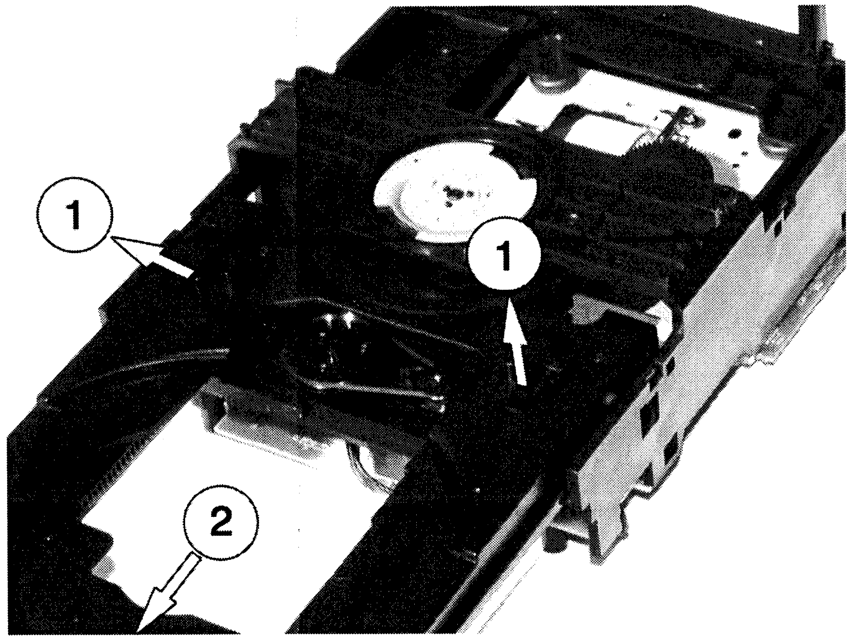
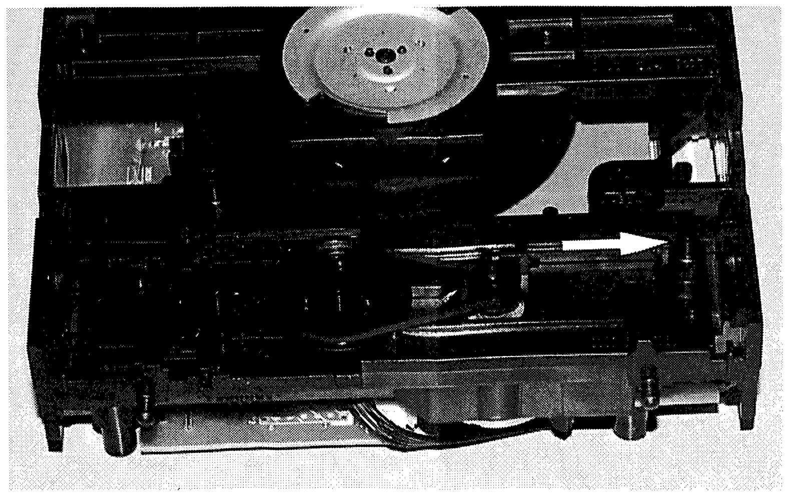


fig.2

Assembling of Drawer

1. Check if slider is on the right side → see picture below.
2. If necessary - move slider to the right end position first.
3. Insert the Drawer.

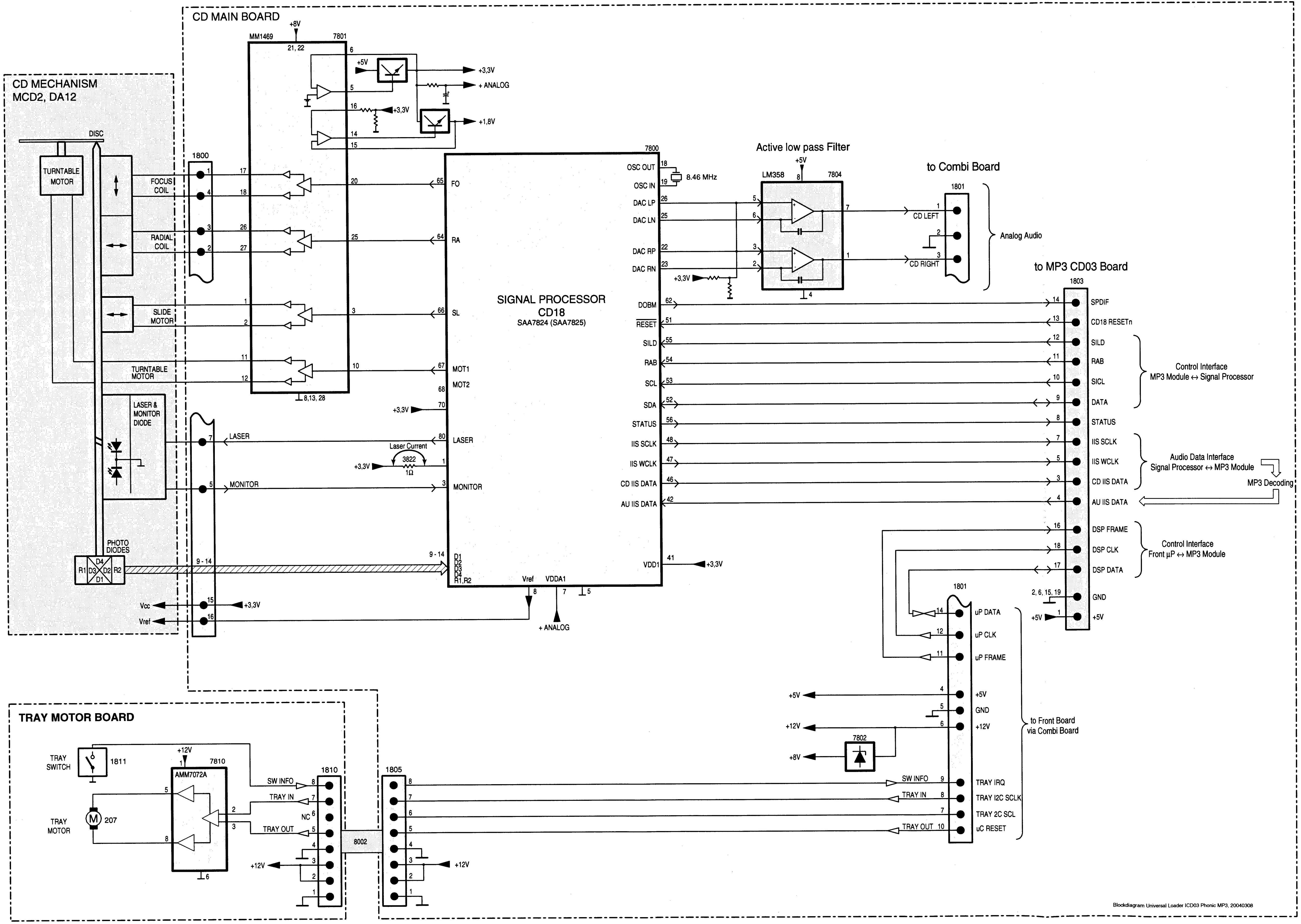


Abbreviations

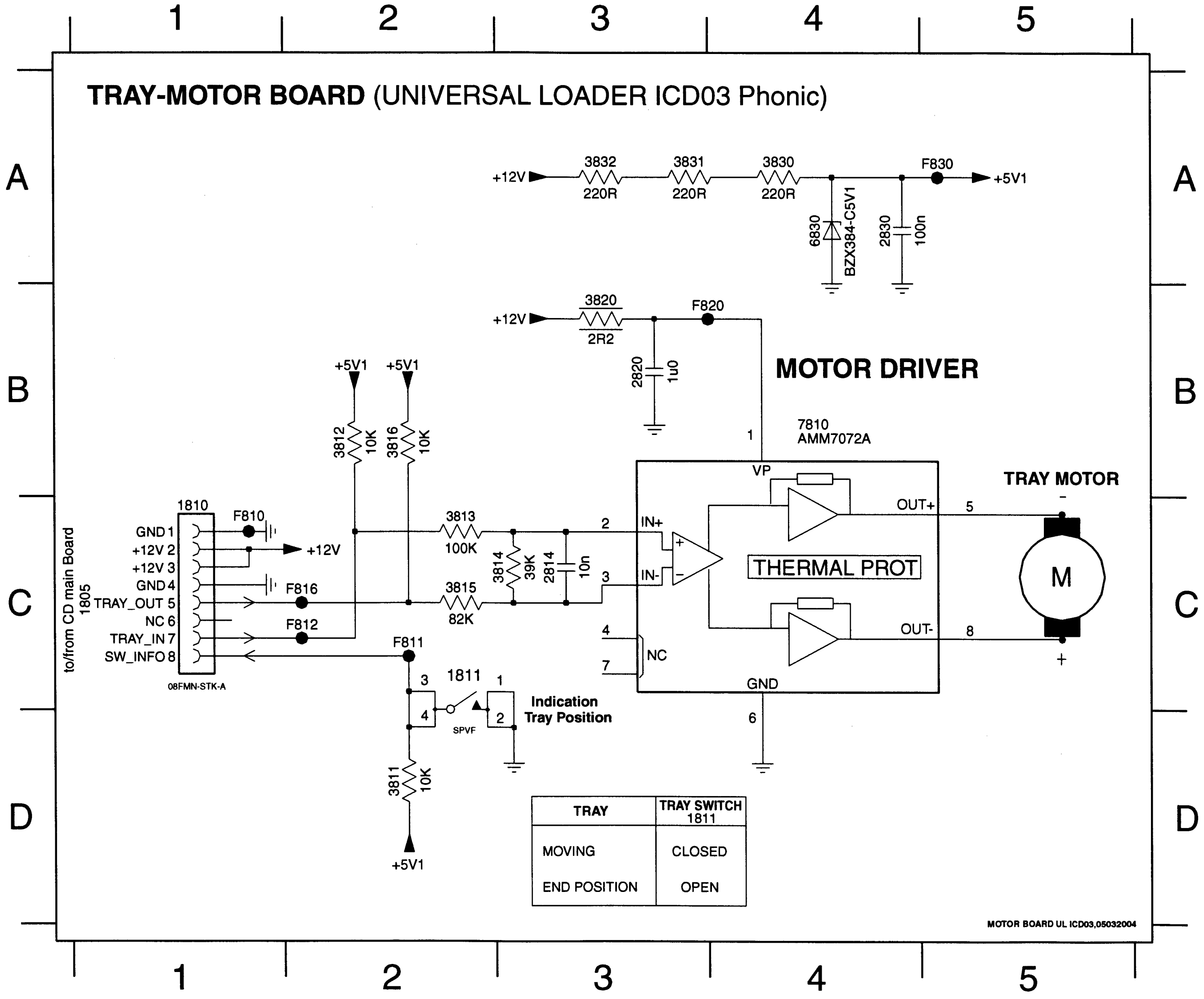
SIGNAL PROCESSOR (CD18) SAA7825

SYMBOL	PIN	I/O	DESCRIPTION
LFPOWER	1	I	laser power supply
EXFILTER	2	O	10 nF capacitor for laser start-up control
MONITOR	3	I	laser monitor diode
SENSE	4	I	OPU ground reference point for MONITOR measurement
V_{SSA1}	5	SUP	analog ground 1
I_{REF}	6	O	reference current output (22 kΩ resistor connected to analog ground)
V_{DDA1}	7	SUP	analog supply voltage 1
V_{REFO}	8	I/O	servo reference voltage
D1	9	I	diode voltage/current input (central diode signal input)
D2	10	I	diode voltage/current input (central diode signal input)
D3	11	I	diode voltage/current input (central diode signal input)
D4	12	I	diode voltage/current input (central diode signal input)
R1	13	I	diode voltage/current input (satellite diode signal input)
R2	14	I	diode voltage/current input (satellite diode signal input)
CSLICE	15	I/O	22 nF capacitor for adaptive HF data slicer
V_{DDA2}	16	SUP	analog supply voltage 2
V_{SSA2}	17	SUP	analog ground 2
OSCOUT	18	O	crystal/resonator output
OSCIN	19	I	crystal/resonator input
V_{SSA3}	20	SUP	analog ground 3
DACGND	21	I	audio DAC ground
DACRP	22	O	audio DAC right channel differential positive output
DACRN	23	O	audio DAC right channel differential negative output
$DACV_{ref}$	24	I/O	audio DAC decoupling point (10 µF or 100 nF to ground
DACLN	25	O	audio DAC left channel differential negative output
DACLP	26	O	audio DAC left channel differential positive output
$DACV_{pos}$	27	I	audio DAC positive supply voltage
$BUFV_{pos}$	28	I	audio buffer positive supply voltage
BUFINR	29	I	audio buffer right input
BUFOUTR	30	O	audio buffer right output
BUFOUTL	31	O	audio buffer left output
BUFINL	32	I	audio buffer left input
BUFGND	33	I	audio buffer ground
LKILL	34	O	KILL output for left channel (configurable as open-drain)
RKILL	35	O	KILL output for right channel (configurable as open-drain)
CDTRDY	36	O	CD text output to microcontroller ready flag
CDTDATA	37	O	CD text output data to microcontroller
CDTCLK	38	I	CD text microcontroller clock input
CFLAG	39	O	correction flag output (open-drain)
V_{SSD1}	40	SUP	digital ground 1
V_{DDD1}	41	SUP	digital supply voltage 1
SDI	42	I	serial data input (loopback)
WCLI	43	I	word clock input (loopback)
SCLI	44	I	serial bit clock input (loopback)
EF	45	O	C2 error flag output
DATA	46	O	serial data output
WCLK	47	O	word clock output
SCLK	48	O	serial clock output
CLK16	49	O	16 MHz clock output
CLK4/12	50	O	configurable 4 MHz or 12 MHz clock output
$\overline{RESET}$	51	I	power-on reset input (active LOW)
SDA	52	I/O	microcontroller interface data input/output (open-drain)
SCL	53	I	microcontroller interface clock input
RAB	54	I	microcontroller interface R/W and load control input (4-wire)
SILD	55	I	microcontroller interface R/W and load control input (4-wire)
STATUS	56	O	servo interrupt request line/decoder status register/DC offset value readback output
RCK	57	I	subcode clock input
SUB	58	O	P to W subcode output
SFSY	59	O	subcode frame sync output
SBSY	60	O	subcode block sync output
V_{SSD2}	61	SUP	digital ground 2
DOBM	62	O	bi-phase mark output (externally buffered)
V_{DDD2}	63	SUP	digital supply voltage 2
RA	64	O	radial actuator output
FO	65	O	focus actuator output
SL	66	O	sledge actuator output
MOTO1	67	O	motor output 1 output
MOTO2	68	O	motor output 2 output
V_{SSD3}	69	SUP	digital ground 3
V_{DDD3}	70	SUP	digital supply voltage 3
V1	71	I	versatile pin 1 input
V2	72	I	versatile pin 2 input
V3	73	O	versatile pin 3 output
V4	74	O	versatile pin 4 output
V5	75	O	versatile pin 5 output
TEST1	76	I	test pin 1 input
TEST2	77	I	test pin 2 input
TEST3	78	I	test pin 3 input
TEST4	79	I	test pin 4 input
LASER	80	O	laser drive output

BLOCK DIAGRAM
Universal Loader / ICD03 PhonIC MP3


CD MAIN BOARD
CD MECHANISM
MCD2, DA12
DISC
TURNTABLE MOTOR
FOCUS COIL
RADIAL COIL
SLIDE MOTOR
TURNTABLE MOTOR
LASER & MONITOR DIODE
PHOTO DIODES
R1 D3 D4 D2 D1 R2
1800
LASER
MONITOR
9 - 14
Vcc
Vref
+3,3V
MM1469
7801
+8V
21, 22
+5V
+3,3V
+ ANALOG
+1,8V
8,13, 28
7800
FO
RA
SL
MOT1
MOT2
LASER
MONITOR
Laser Current
3822
1Ω
D1 D2 D3 D4 R1,R2
Vref
VDDA1
+ ANALOG
SIGNAL PROCESSOR
CD18
SAA7824 (SAA7825)
OSC OUT
OSC IN
8.46 MHz
DAC LP
DAC LN
DAC RP
DAC RN
DOBM
RESET
SILD
RAB
SCL
SDA
STATUS
IIS SCLK
IIS WCLK
CD IIS DATA
AU IIS DATA
VDD1
Active low pass Filter
LM358
7804
to Combi Board
1801
CD LEFT
CD RIGHT
Analog Audio
to MP3 CD03 Board
1803
SPDIF
CD18 RESETn
SILD
RAB
SICL
DATA
STATUS
IIS SCLK
IIS WCLK
CD IIS DATA
AU IIS DATA
DSP FRAME
DSP CLK
DSP DATA
GND
+5V
2, 6, 15, 19
Control Interface
MP3 Module ↔ Signal Processor
Audio Data Interface
Signal Processor ↔ MP3 Module
MP3 Decoding
Control Interface
Front µP ↔ MP3 Module
1801
uP DATA
uP CLK
uP FRAME
+5V
GND
+12V
7802
+8V
SW INFO
TRAY IN
TRAY OUT
TRAY IRQ
TRAY I2C SCLK
TRAY 2C SCL
uC RESET
to Front Board
via Combi Board
TRAY MOTOR BOARD
TRAY SWITCH
1811
TRAY MOTOR
207
+12V
7810
AMM7072A
1810
SW INFO
TRAY IN
NC
TRAY OUT
+12V
8002
1805
+12V
Blockdiagram Universal Loader ICD03 Phonic MP3, 20040308

1810 C1	2814 C3	2830 A4	3812 B2	3814 C3	3816 B2	3830 A4	3832 A3	7810 B4	F811 C2	F816 C2	F830 A5
1811 C2	2820 B3	3811 D2	3813 C2	3815 C2	3820 B3	3831 A3	6830 A4	F810 C1	F812 C2	F820 B3	

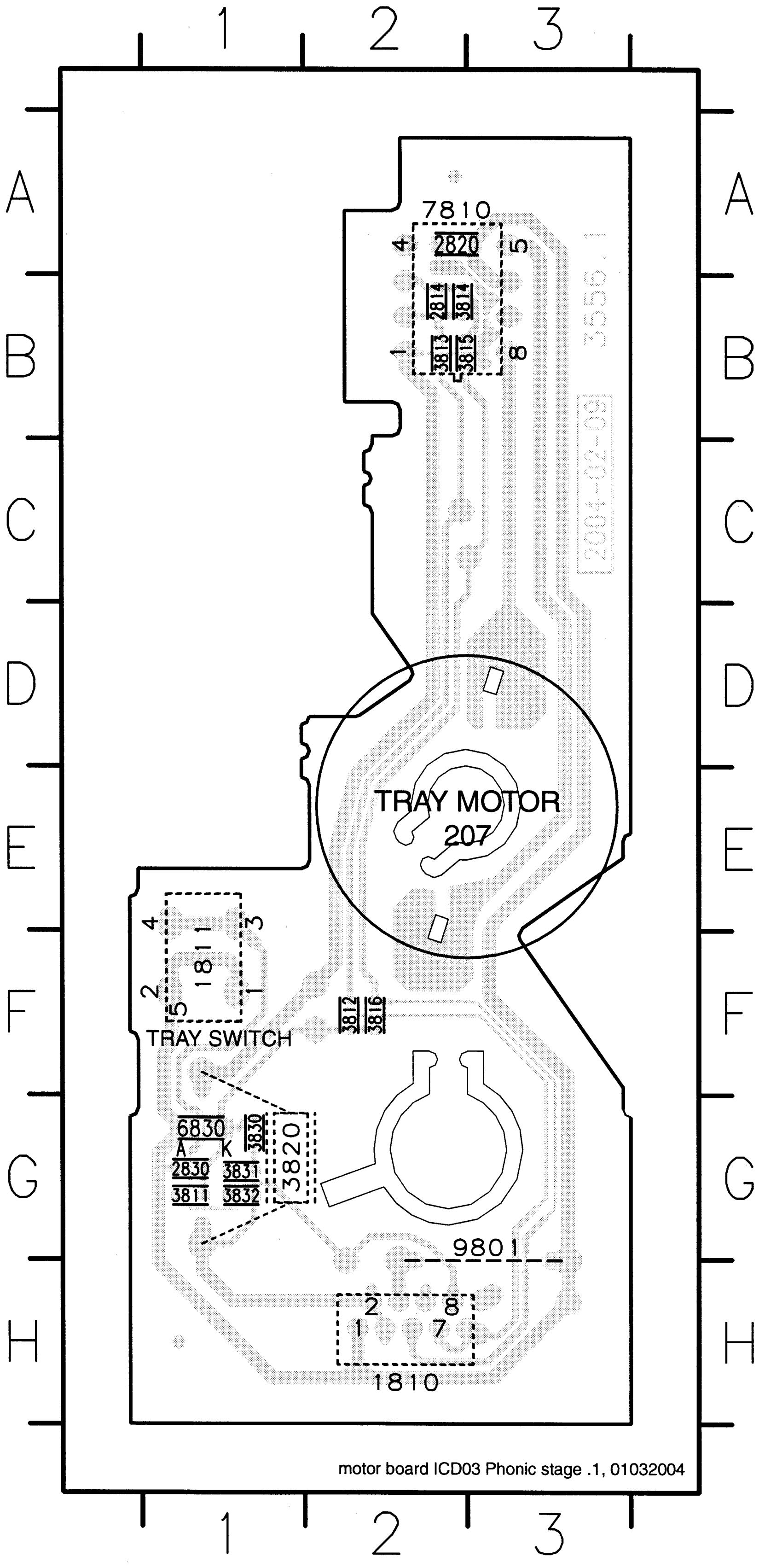


TRAY-MOTOR BOARD (UNIVERSAL LOADER ICD03 Phonic)

1
2
3
4
5
A
B
C
D
+12V
3832
220R
3831
220R
3830
220R
F830
+5V1
6830
BZX384-C5V1
2830
100n
3820
2R2
F820
2820
1u0
MOTOR DRIVER
7810
AMM7072A
+5V1
+5V1
3812
10K
3816
10K
to/from CD main Board
1805
1810
GND 1
+12V 2
+12V 3
GND 4
TRAY_OUT 5
NC 6
TRAY_IN 7
SW_INFO 8
08FMN-STK-A
F810
F816
F812
F811
3813
100K
3815
82K
3814
39K
2814
10n
IN+
IN-
NC
VP
GND
OUT+
OUT-
THERMAL PROT
TRAY MOTOR
M
1811
SPVF
Indication
Tray Position
3811
10K
MOTOR BOARD UL ICD03,05032004

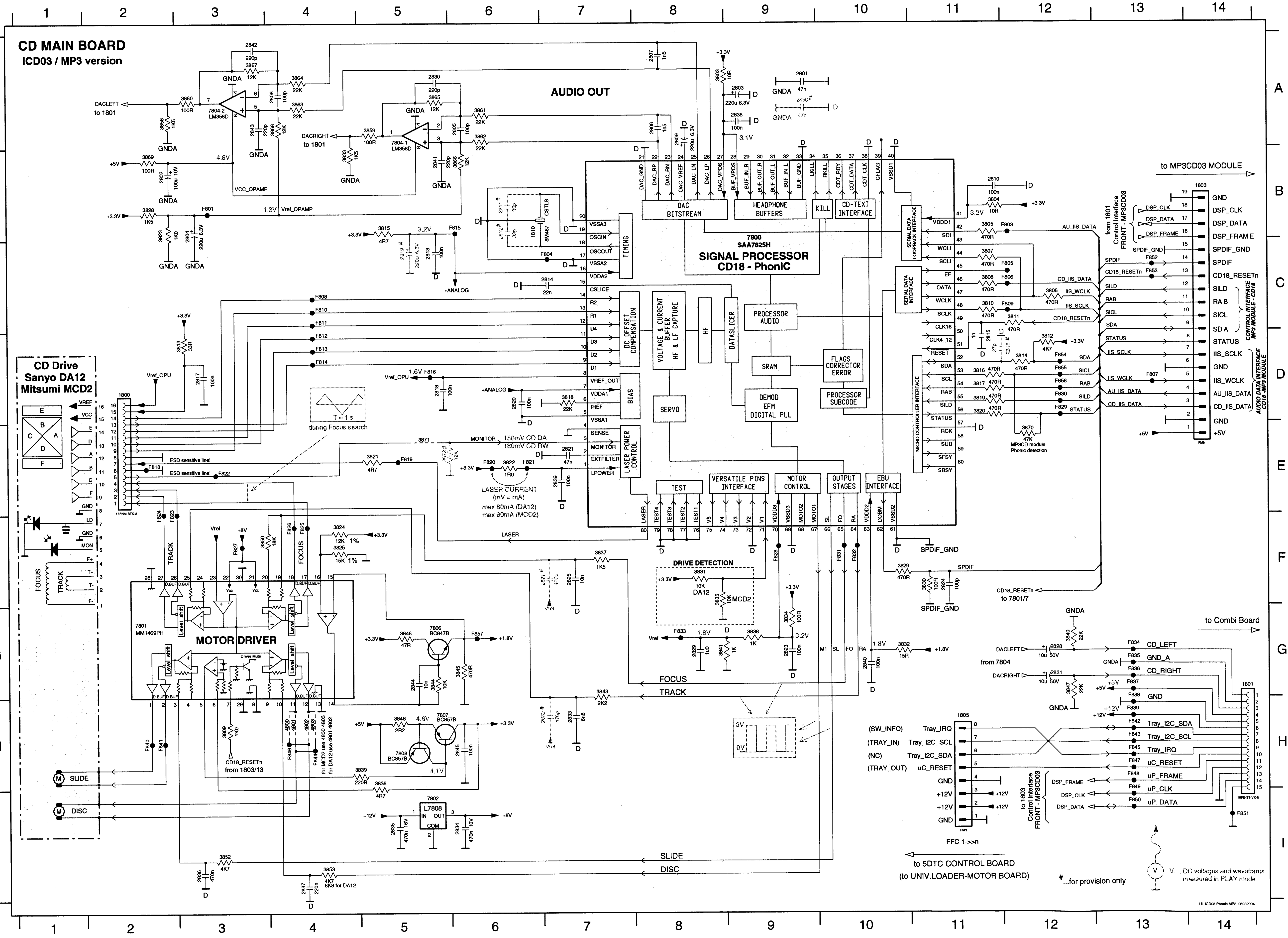
TRAY	TRAY SWITCH 1811
MOVING	CLOSED
END POSITION	OPEN

TRAY MOTOR BOARD / copper side view



1
2
3
A
B
C
D
E
F
G
H
7810
2820
2814
3814
3813
3815
4
5
1
8
3556.1
2004-02-09
TRAY MOTOR
207
1811
TRAY SWITCH
3812
3816
6830
A
K
3830
2830
3831
3811
3832
3820
9801
1810
motor board ICD03 Phonic stage .1, 01032004

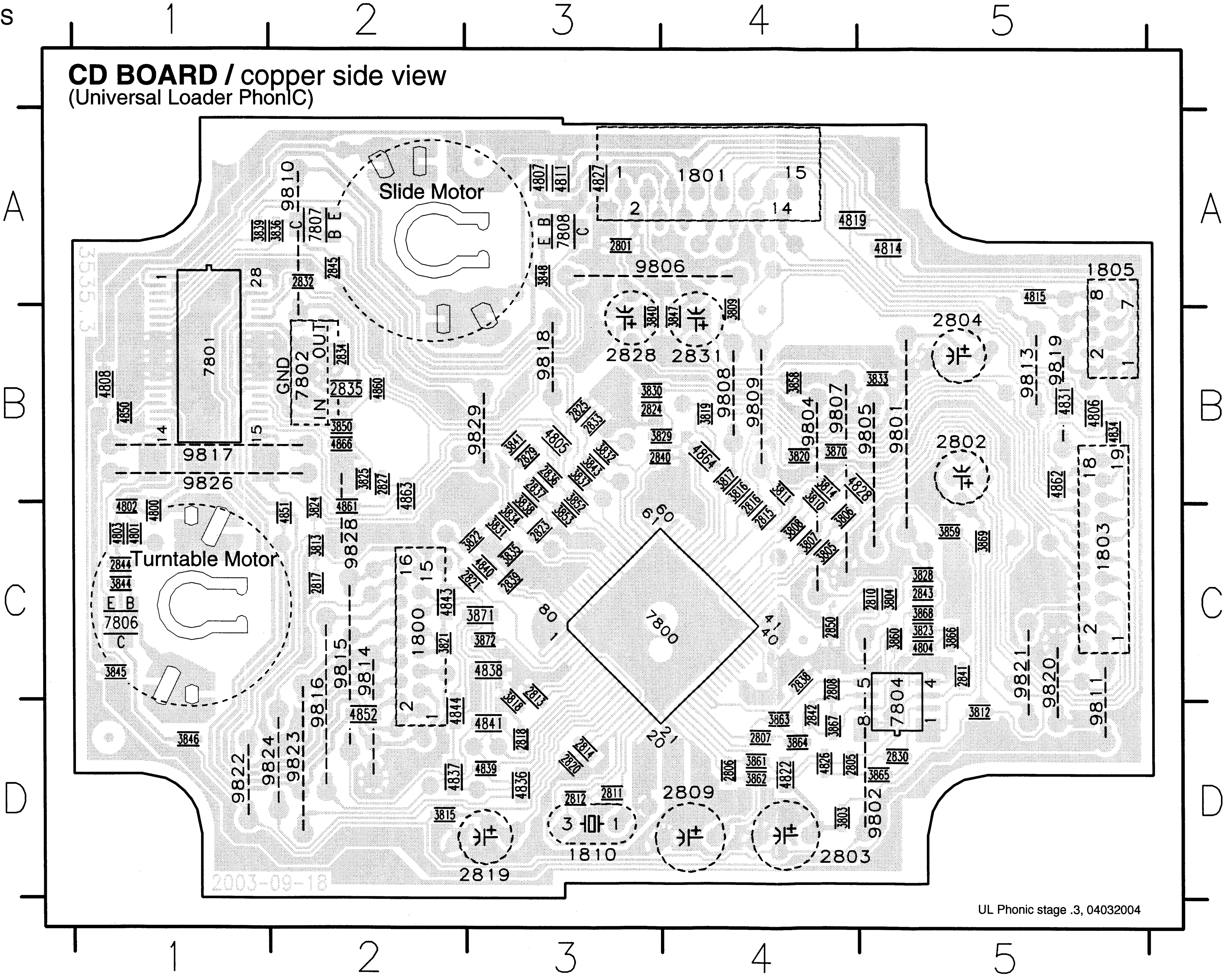
1810	H2
1811	F3
2814	B2
2820	A2
2830	G1
3811	G1
3812	F2
3813	B2
3814	B2
3815	B2
3816	F2
3820	G3
3830	G1
3831	G1
3832	G1
6830	G1
7810	B2
9801	H1


CD MAIN BOARD
ICD03 / MP3 version
AUDIO OUT
CD Drive
Sanyo DA12
Mitsumi MCD2
7800
SAA7825H
SIGNAL PROCESSOR
CD18 - PhonIC
DAC BITSTREAM
HEADPHONE BUFFERS
KILL
CD-TEXT INTERFACE
TIMING
DC OFFSET COMPENSATION
VOLTAGE & CURRENT BUFFER HF & LF CAPTURE
HF
DATASLICER
PROCESSOR AUDIO
SRAM
FLAGS CORRECTOR ERROR
PROCESSOR SUBCODE
DEMOD EFM DIGITAL PLL
SERVO
BIAS
LASER POWER CONTROL
TEST
VERSATILE PINS INTERFACE
MOTOR CONTROL
OUTPUT STAGES
EBU INTERFACE
SERIAL DATA LOOPBACK INTERFACE
SERIAL DATA INTERFACE
MICRO CONTROLLER INTERFACE
7801
MM1469PH
MOTOR DRIVER
7804-2 LM358D
7804-1 LM358D
DACLEFT to 1801
DACRIGHT to 1801
to MP3CD03 MODULE
1803
from 1801 Control Interface FRONT - MP3CD03
CONTROL INTERFACE MP3 MODULE - CD18
AUDIO DATA INTERFACE CD18 -MP3 MODULE
GND
DSP_CLK
DSP_DATA
DSP_FRAME
SPDIF_GND
SPDIF
CD18_RESETn
SILD
RAB
SICL
SDA
STATUS
IIS_SCLK
IIS_WCLK
AU_IIS_DATA
CD_IIS_DATA
+5V
DRIVE DETECTION
DA12
MCD2
LASER CURRENT (mV = mA)
max 80mA (DA12)
max 60mA (MCD2)
MONITOR 150mV CD DA 180mV CD RW
T = 1 s during Focus search
ESD sensitive line!
SLIDE
DISC
FOCUS
TRACK
to Combi Board
CD_LEFT
GND_A
CD_RIGHT
Tray_I2C_SDA
Tray_I2C_SCL
Tray_IRQ
uC_RESET
uP_FRAME
uP_CLK
uP_DATA
1801
1805
(SW_INFO) Tray_IRQ
(TRAY_IN) Tray_I2C_SCL
(NC) Tray_I2C_SDA
(TRAY_OUT) uC_RESET
+12V
FFC 1->>n
to 1803 Control Interface FRONT - MP3CD03
to 5DTC CONTROL BOARD
(to UNIV.LOADER-MOTOR BOARD)
#...for provision only
V... DC voltages and waveforms measured in PLAY mode
CD18_RESETn from 1803/13
CD18_RESETn to 7801/7
7802 L7808
7806 BC847B
7807 BC857B
7808 BC857B
for MCD2 use 4800 4803
for DA12 use 4801 4802
UL ICD03 Phonic MP3. 08032004
1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I

1800 D2	7801 G2
1801 G14	7802 I5
1803 B14	7804-1 A5
1805 H11	7804-2 A3
1810 B6	7806 G5
2801 A9	7807 H5
2802 B2	7808 H5
2803 A9	F801 B3
2804 B3	F803 B12
2805 A6	F804 C7
2806 A8	F805 C12
2807 A8	F806 C12
2808 A4	F807 D13
2809 A8	F808 C4
2810 B11	F809 C12
2811 B6	F810 C4
2812 B6	F811 C4
2813 C5	F812 D4
2814 C7	F813 D4
2815 D11	F814 D4
2816 D12	F815 B6
2817 D3	F816 D5
2818 D5	F818 E2
2819 C5	F819 E5
2820 D6	F820 E6
2821 E7	F821 E6
2823 G9	F822 E3
2824 F11	F823 E2
2825 F7	F824 E2
2827 F7	F825 F4
2828 G12	F826 F4
2829 G8	F827 F3
2830 A5	F828 F9
2831 G12	F829 D12
2832 H6	F830 D12
2833 H7	F831 F10
2834 I6	F832 F10
2835 I5	F833 G8
2836 I3	F834 G13
2837 I4	F835 G13
2838 A9	F836 G13
2839 E7	F837 G13
2840 G10	F838 H13
2841 B5	F839 H13
2842 A3	F840 H2
2843 A3	F841 H2
2844 G5	F842 H13
2845 H6	F843 H13
2850 A9	F844 H4
3803 A8	F845 H13
3804 B11	F846 H4
3805 B11	F847 H13
3806 C12	F848 H13
3807 C11	F849 I13
3808 C11	F850 I13
3809 H3	F851 I14
3810 C11	F852 C13
3811 C12	F853 C13
3812 D12	F854 D12
3813 D3	F855 D12
3814 D12	F856 D12
3815 B5	F857 G6
3816 D11	
3817 D11	
3818 D7	
3819 D11	
3820 D11	
3821 E5	
3822 E6	
3823 B2	
3824 F4	
3825 F4	
3828 B2	
3829 F10	
3830 F11	
3831 F8	
3832 G10	
3833 B4	
3834 G9	
3835 F8	
3836 H5	
3837 F7	
3838 G9	
3839 H4	
3840 G12	
3841 G8	
3843 G7	
3844 G5	
3845 G6	
3846 G5	
3847 G12	
3848 H5	
3850 F3	
3852 I3	
3853 I4	
3858 A2	
3859 A5	
3860 A3	
3861 A6	
3862 A6	
3863 A4	
3864 A4	
3865 A5	
3866 B6	
3867 A3	
3868 A4	
3869 B2	
3870 E12	
3871 E5	
3872 E5	
4800 H4	
4801 H4	
4802 H4	
4803 H4	
7800 B11	

WIRED COMPONENTS

1800	C2
1801	A4
1803	C5
1805	B5
1810	D3
2802	B5
2803	D4
2804	B5
2809	D4
2819	D3
2828	B3
2831	B4
7802	B2
9801	B5
9802	D5
9804	B4
9805	B5
9806	A3
9807	B4
9808	B4
9809	B4
9810	A2
9811	C5
9813	B5
9814	D2
9815	C2
9816	D2
9817	B1
9818	B3
9819	B5
9820	C5
9821	C5
9822	D1
9823	D2
9824	D2
9826	B1
9828	C2
9829	B3



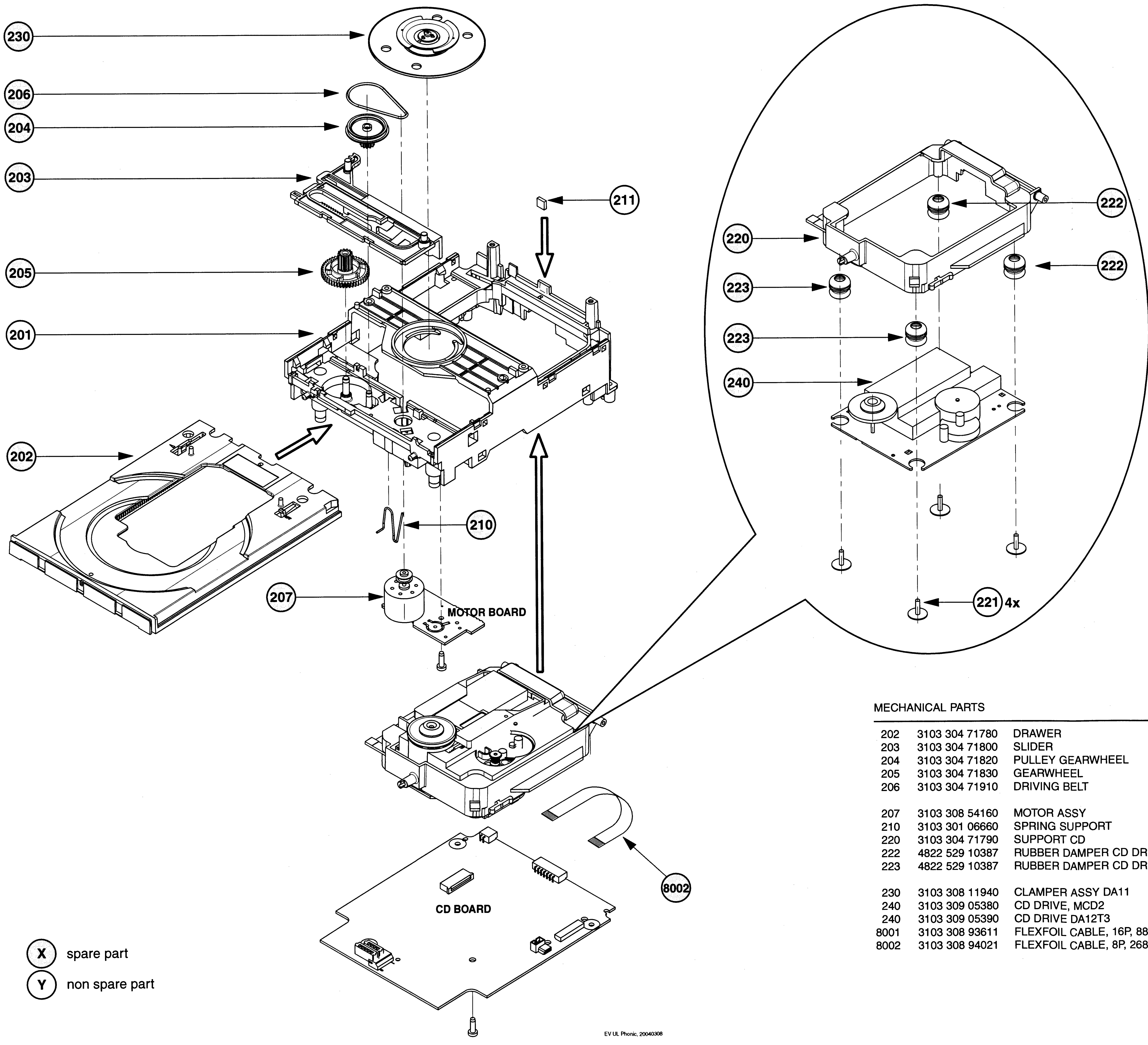
CD BOARD / copper side view
(Universal Loader PhonIC)

1
2
3
4
5
A
B
C
D
Slide Motor
Turntable Motor
1801
1805
1803
1800
1810
7800
7801
7802
7804
7806
7807
7808
2802
2803
2804
2809
2819
2828
2831
9806
9817
9826
GND
OUT
IN
E B
C
2003-09-18
UL Phonic stage .3, 04032004

SURFACE MOUNTED COMPONENTS

2801	A3
2805	D4
2806	D4
2807	D4
2808	C4
2810	C5
2811	D3
2812	D3
2813	C3
2814	D3
2815	C4
2816	C4
2817	C2
2818	D3
2820	D3
2821	C3
2823	C3
2824	B3
2825	B3
2827	B2
2829	B3
2830	D5
2832	A2
2833	B3
2834	B2
2835	B2
2836	B3
2837	B3
2838	C4
2839	C3
2840	B3
2841	C5
2842	D4
2843	C5
2844	C1
2845	A2
2850	C4
3803	D4
3804	C5
3805	C4
3806	C4
3807	C4
3808	C4
3809	B4
3810	B4
3811	B4
3812	D5
3813	C2
3814	B4
3815	D2
3816	B4
3817	B4
3818	D3
3819	B4
3820	B4
3821	C2
3822	C3
3823	C5
3824	C2
3825	B2
3828	C5
3829	B3
3830	B3
3831	C3
3832	B3
3833	B5
3834	C3
3835	C3
3836	A2
3837	B3
3838	C3
3839	A1
3840	B3
3841	B3
3843	B3
3844	C1
3845	C1
3846	D1
3847	B4
3848	A3
3850	B2
3852	B3
3853	C3
3858	B4
3859	C5
3860	C5
3861	D4
3862	D4
3863	D4
3864	D4
3865	D5
3866	C5
3867	D4
3868	C5
3869	C5
3870	B4
3871	C3
3872	C3
4800	C1
4801	C1
4802	C1
4803	C1
4804	C5
4805	B3
4806	B5
4807	A3
4808	B1
4811	A3
4814	A5
4815	A5
4819	A4
4822	D4
4826	D4
4827	A3
4828	B5
4831	B5
4834	B5
4836	D3
4837	D2
4838	C3
4839	D3
4840	C3
4841	D3
4843	C2
4844	D2
4850	B1
4851	C2
4852	D2
4860	B2
4861	C2
4862	B5
4863	B2
4864	B4
4866	B2
7800	C3
7801	B1
7804	D5
7806	C1
7807	A2
7808	A3

Exploded view *Universal Loader*


230
206
204
203
211
205
201
220
222
222
223
223
240
202
210
207
MOTOR BOARD
221 4x
8002
CD BOARD

EV UL Phonic, 20040308

MECHANICAL PARTS

202	3103 304 71780	DRAWER
203	3103 304 71800	SLIDER
204	3103 304 71820	PULLEY GEARWHEEL
205	3103 304 71830	GEARWHEEL
206	3103 304 71910	DRIVING BELT
207	3103 308 54160	MOTOR ASSY
210	3103 301 06660	SPRING SUPPORT
220	3103 304 71790	SUPPORT CD
222	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
223	4822 529 10387	RUBBER DAMPER CD DRIVE, FRONT
230	3103 308 11940	CLAMPER ASSY DA11
240	3103 309 05380	CD DRIVE, MCD2
240	3103 309 05390	CD DRIVE DA12T3
8001	3103 308 93611	FLEXFOIL CABLE, 16P, 88mm BD
8002	3103 308 94021	FLEXFOIL CABLE, 8P, 268mm AD

Ⓧ spare part

Ⓨ non spare part

MOTOR BOARD

MISCELLANEOUS

1810	2422 025 16371	FFC-CONNECTOR, 8P, SIDE ENTRY
1811	2422 129 16655	LEAF SWITCH, 1P

CAPACITORS

2814©	5322 126 11583	10nF	10%	63V
2820©	4822 126 14043	1µF	20%	16V
2830©	2238 586 59812	100nF	10%	50V

RESISTORS

3811©	4822 051 30103	10kΩ	5%	0,06W
3812©	4822 051 30103	10kΩ	5%	0,06W
3813©	4822 117 13632	100kΩ	1%	0,06W
3814©	4822 051 30393	39kΩ	5%	0,06W
3815©	4822 117 12864	82kΩ	5%	0,06W
3816©	4822 051 30103	10kΩ	5%	0,06W
3820	4822 052 10228	2,2Ω	5%	0,33W
3830©	4822 051 30221	220Ω	5%	0,06W
3831©	4822 051 30221	220Ω	5%	0,06W
3832©	4822 051 30221	220Ω	5%	0,06W

DIODES

6830©	9340 548 52115	BZX284-C5V1

INTEGRATED CIRCUITS

7810	9322 196 36682	AMM7072A, MOTOR DRIVER

MP3 CD03 BOARD

Only complete board available

3103 308 67611	MP3 CD03 BOARD TXT5V

CD BOARD

MISCELLANEOUS

1800	4822 267 11028	FFC-CONNECTOR, 16P, SIDE ENTRY
1801	4822 265 10979	FFC-CONNECTOR, 15P, SIDE ENTRY
1803	2422 025 16836	FFC-CONNECTOR, 19P, SIDE ENTRY
1805	2422 025 16371	FFC-CONNECTOR, 8P, SIDE ENTRY

CAPACITORS

2801©	3198 017 34730	47nF	10%	16V
2802	4822 124 41584	100µF	20%	10V
2803	4822 124 12052	220µF	20%	6,3V
2804	4822 124 11912	220µF	20%	6,3V
2805©	2020 552 94427	100pF	5%	50V
2806©	2238 916 11552	1,5nF	5%	25V
2807©	2238 916 11552	1,5nF	5%	25V
2808©	2020 552 94427	100pF	5%	50V
2809	4822 124 12052	220µF	20%	6,3V
2810©	2238 586 59812	100nF	10%	50V
2813©	2238 586 59812	100nF	10%	50V
2814©	2238 916 15641	22nF	10%	25V
2815©	5322 126 11578	1nF	10%	63V
2817©	2238 586 59812	100nF	10%	50V
2818©	2238 586 59812	100nF	10%	50V
2820©	2238 586 59812	100nF	10%	50V
2821©	3198 024 44730	47nF	5%	50V
2823©	2238 586 59812	100nF	10%	50V
2825©	5322 126 11583	10nF	10%	63V
2828	4822 124 40248	10µF	20%	63V
2829©	3198 017 41050	1µF	20%	10V
2830©	4822 126 13883	220pF	5%	50V
2831	4822 124 40248	10µF	20%	63V
2833©	5322 126 11582	6,8nF	10%	63V
2834©	3198 017 44740	470nF	20%	10V
2835©	4822 126 13482	470nF	20%	16V
2836©	3198 017 44740	470nF	20%	10V
2837©	4822 126 13879	220nF	20%	16V
2838©	2238 586 59812	100nF	10%	50V
2839©	2238 586 59812	100nF	10%	50V
2840©	2238 586 59812	100nF	10%	50V
2841©	4822 126 13883	220pF	5%	50V
2842©	4822 126 13883	220pF	5%	50V
2843©	4822 126 13883	220pF	5%	50V
2844©	5322 126 11583	10nF	10%	63V
2845©	2238 586 59812	100nF	10%	50V

RESISTORS

3803©	4822 051 30109	10Ω	5%	0,06W
3804©	4822 051 30109	10Ω	5%	0,06W
3805©	4822 051 30471	470Ω	5%	0,06W
3806©	4822 051 30471	470Ω	5%	0,06W
3807©	4822 051 30471	470Ω	5%	0,06W
3808©	4822 051 30471	470Ω	5%	0,06W
3809©	4822 051 30102	1kΩ	5%	0,06W
3810©	4822 051 30471	470Ω	5%	0,06W
3811©	4822 051 30471	470Ω	5%	0,06W
3812©	4822 051 30472	4,7kΩ	5%	0,06W
3813©	4822 051 30339	33Ω	5%	0,06W
3814©	4822 051 30471	470Ω	5%	0,06W
3815©	4822 117 13608	4,7Ω	5%	0,06W
3816©	4822 051 30471	470Ω	5%	0,06W
3817©	4822 051 30471	470Ω	5%	0,06W
3818©	4822 051 30223	22kΩ	5%	0,06W
3819©	4822 051 30471	470Ω	5%	0,06W
3820©	4822 051 30471	470Ω	5%	0,06W
3821©	4822 117 13608	4,7Ω	5%	0,06W
3822©	4822 117 12917	1Ω	5%	0,06W

RESISTORS

3823©	4822 051 30102	1kΩ	5%	0,06W	
3824©	5322 117 13028	12kΩ	1%	0.06W	
3825©	5322 117 13033	15kΩ	1%	0.06W	
3828©	4822 051 30152	1,5kΩ	5%	0,06W	
3831©	4822 051 30103	10kΩ	5%	0,06W	for DA12 drive only
3832©	4822 117 12971	15Ω	5%	0,06W	
3833©	4822 051 30152	1,5kΩ	5%	0,06W	
3834©	4822 051 30101	100Ω	5%	0,06W	
3835©	4822 051 30103	10kΩ	5%	0,06W	for MCD2 drive only
3836©	4822 117 13608	4,7Ω	5%	0,06W	
3837©	4822 051 30152	1,5kΩ	5%	0,06W	
3838©	4822 051 30102	1kΩ	5%	0,06W	
3839©	4822 051 30221	220Ω	5%	0,06W	
3840©	4822 051 30223	22kΩ	5%	0,06W	
3841©	4822 051 30102	1kΩ	5%	0,06W	
3843©	4822 051 30222	2,2kΩ	5%	0,06W	
3844©	4822 051 30103	10kΩ	5%	0,06W	
3845©	4822 051 30471	470Ω	5%	0,06W	
3846©	4822 051 30479	47Ω	5%	0,06W	
3847©	4822 051 30223	22kΩ	5%	0,06W	
3848©	4822 117 13613	2,2Ω	5%	0,06W	
3850©	4822 051 30183	18kΩ	5%	0,06W	
3852©	4822 051 30472	4,7kΩ	5%	0,06W	
3853©	4822 051 30472	4,7kΩ	5%	0,06W	for MCD2 drive only
3853©	4822 051 30682	6,8kΩ	5%	0,06W	for DA12 drive only
3858©	4822 051 30152	1,5kΩ	5%	0,06W	
3859©	4822 051 30101	100Ω	5%	0,06W	
3860©	4822 051 30101	100Ω	5%	0,06W	
3861©	4822 051 30223	22kΩ	5%	0,06W	
3862©	4822 051 30223	22kΩ	5%	0,06W	
3863©	4822 051 30223	22kΩ	5%	0,06W	
3864©	4822 051 30223	22kΩ	5%	0,06W	
3865©	4822 051 30123	12kΩ	5%	0,06W	
3866©	4822 051 30123	12kΩ	5%	0,06W	
3867©	4822 051 30123	12kΩ	5%	0,06W	
3868©	4822 051 30123	12kΩ	5%	0,06W	
3869©	4822 051 30101	100Ω	5%	0,06W	
3870©	4822 117 12925	47kΩ	1%	0,06W	
3871©	4822 051 20008	CHIP JUMPER 0805			
4800©	4822 051 30008	CHIP JUMPER 0603			for MCD2 drive only
4801©	4822 051 30008	CHIP JUMPER 0603			for DA12 drive only
4802©	4822 051 30008	CHIP JUMPER 0603			for DA12 drive only
4803©	4822 051 30008	CHIP JUMPER 0603			for MCD2 drive only
4804©	4822 051 30008	CHIP JUMPER 0603			
4805©	4822 051 20008	CHIP JUMPER 0805			
4806©	4822 051 20008	CHIP JUMPER 0805			
4807©	4822 051 20008	CHIP JUMPER 0805			
4808©	4822 051 20008	CHIP JUMPER 0805			
4811©	4822 051 20008	CHIP JUMPER 0805			
4814©	4822 051 20008	CHIP JUMPER 0805			
4815©	4822 051 30008	CHIP JUMPER 0603			
4819©	4822 051 20008	CHIP JUMPER 0805			
4822©	4822 051 20008	CHIP JUMPER 0805			
4826©	4822 051 30008	CHIP JUMPER 0603			
4827©	4822 051 20008	CHIP JUMPER 0805			
4828©	4822 051 20008	CHIP JUMPER 0805			
4831©	4822 051 20008	CHIP JUMPER 0805			
4834©	4822 051 30008	CHIP JUMPER 0603			
4836©	4822 051 20008	CHIP JUMPER 0805			
4837©	4822 051 20008	CHIP JUMPER 0805			
4838©	4822 051 20008	CHIP JUMPER 0805			
4839©	4822 051 30008	CHIP JUMPER 0603			
4840©	4822 051 30008	CHIP JUMPER 0603			
4841©	4822 051 20008	CHIP JUMPER 0805			

RESISTORS

4843©	4822 051 20008	CHIP JUMPER 0805
4844©	4822 051 20008	CHIP JUMPER 0805
4850©	4822 051 30008	CHIP JUMPER 0603
4851©	4822 051 30008	CHIP JUMPER 0603
4852©	4822 051 20008	CHIP JUMPER 0805
4860©	4822 051 30008	CHIP JUMPER 0603
4861©	4822 051 30008	CHIP JUMPER 0603
4862©	4822 051 20008	CHIP JUMPER 0805
4863©	4822 051 20008	CHIP JUMPER 0805
4864©	4822 051 20008	CHIP JUMPER 0805
4866©	4822 051 30008	CHIP JUMPER 0603

COILS

1810	2422 540 98519	RESONATOR 8,467MHz

TRANSISTORS

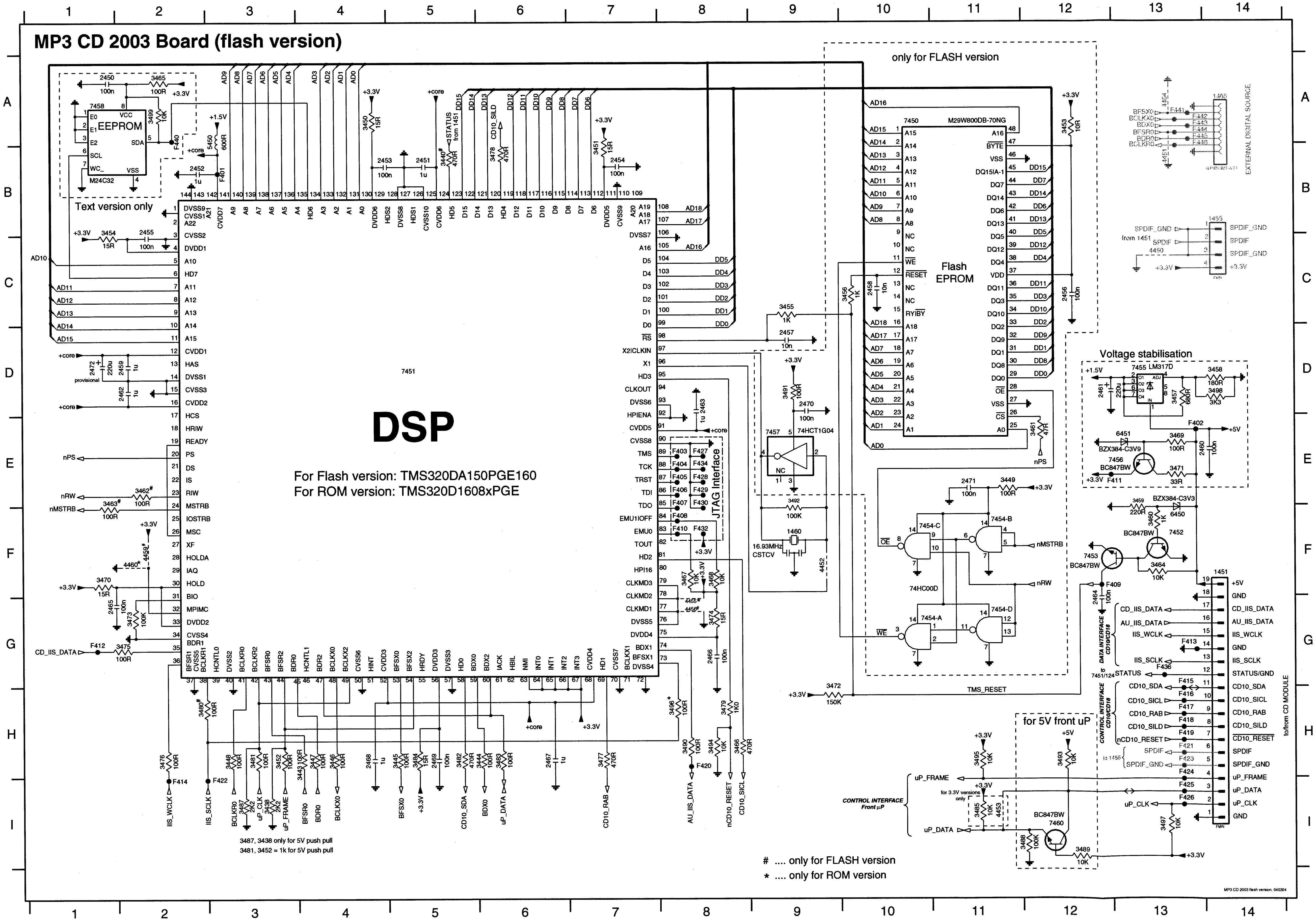
7806©	5322 130 60159	BC846B
7807©	4822 130 60373	BC856B
7808©	4822 130 60373	BC856B

INTEGRATED CIRCUITS

7800©	9352 731 95557	SAA7825H, SIGNAL PROC. PHONIC
7801©	9322 181 79668	MM1469PH, MOTOR DRIVER
7802	4822 209 72554	MC7808CT, 8V Regulator
7804©	5322 209 82941	LM358D, DUAL OP-AMP.

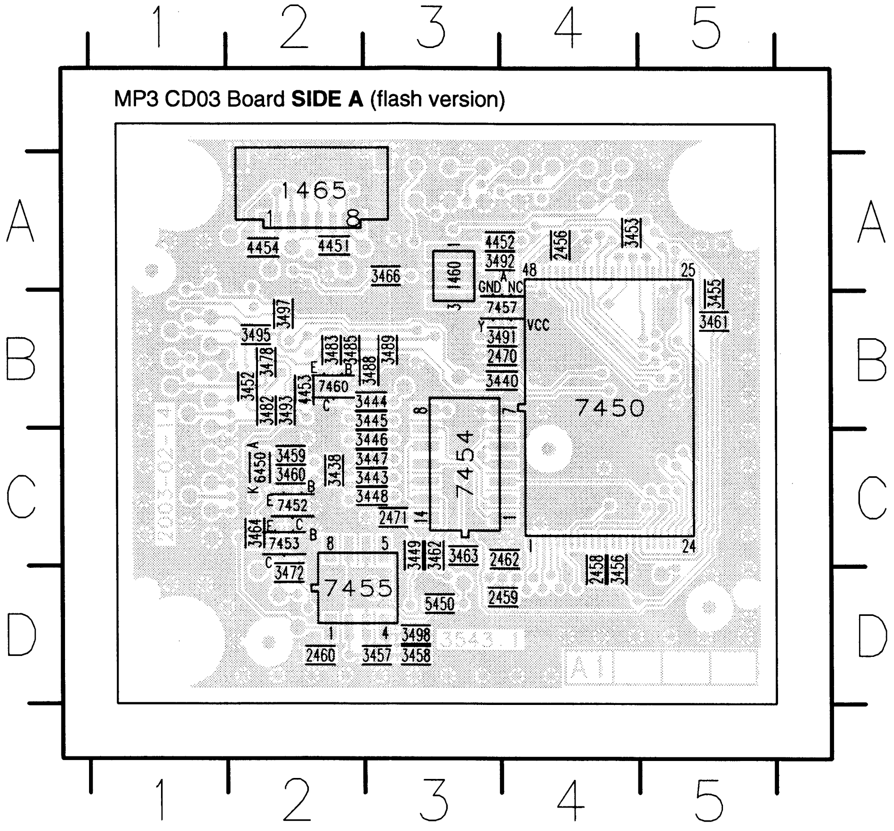
MP3 BOARD FOR ORIENTATION ONLY

MP3 CD 2003 Board (flash version)

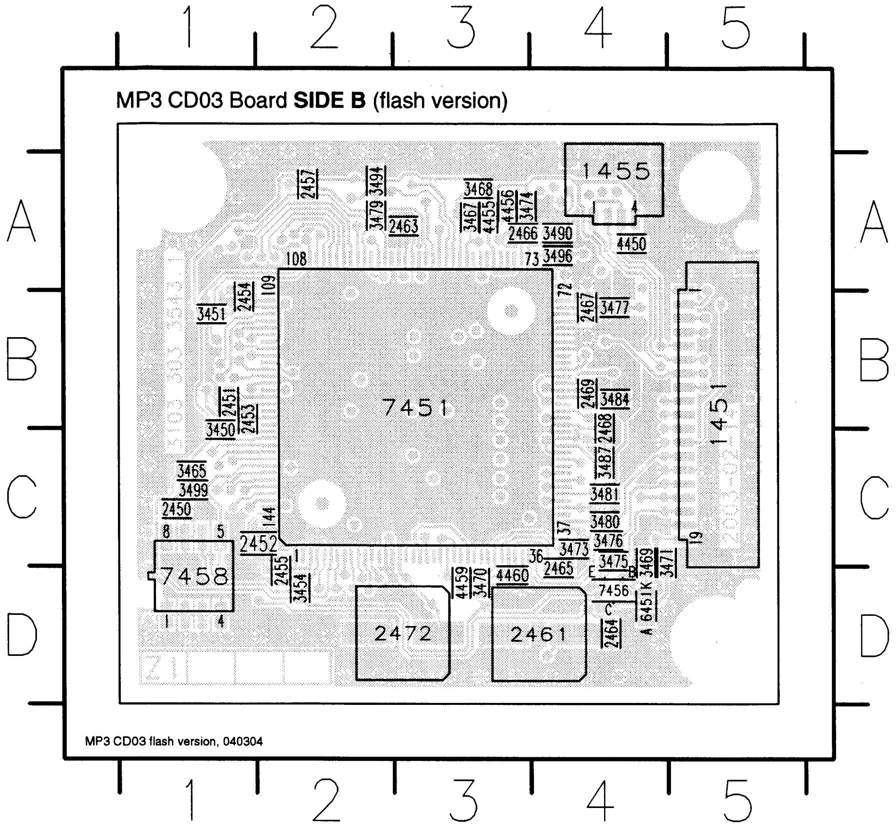

DSP
7451
For Flash version: TMS320DA150PGE160
For ROM version: TMS320D1608xPGE
EEPROM
7458
M24C32
Text version only
only for FLASH version
7450
M29W800DB-70NG
Flash EPROM
JTAG Interface
7457 74HCT1G04
1460
16.93MHz CSTCV
74HC00D
7454-A
7454-B
7454-C
7454-D
Voltage stabilisation
7455 LM317D
BZX384-C3V9
7456 BC847BW
7452 BC847BW
7453 BC847BW
for 5V front uP
7460 BC847BW
1451
1455
1465
EXTERNAL DIGITAL SOURCE
to/from CD MODULE
DATA INTERFACE CD10/CD18
CONTROL INTERFACE CD10/CD18
CONTROL INTERFACE Front µP
for 3.3V versions only
nPS
nRW
nMSTRB
CD_IIS_DATA
AU_IIS_DATA
IIS_WCLK
IIS_SCLK
STATUS
CD10_SDA
CD10_SICL
CD10_RAB
CD10_SILD
nCD10_RESET
SPDIF
SPDIF_GND
uP_FRAME
uP_DATA
uP_CLK
TMS_RESET
+5V
+3.3V
+1.5V
+core
GND
3487, 3438 only for 5V push pull
3481, 3452 = 1k for 5V push pull
# .... only for FLASH version
* .... only for ROM version
MP3 CD 2003 flash version, 040304

1451	F14
1455	B14
1460	F9
1465	A14
2450	A1
2451	B5
2452	B2
2453	B4
2454	B7
2455	B2
2456	C12
2457	D9
2458	C10
2459	D2
2460	E13
2461	D12
2462	D2
2463	D8
2464	G12
2465	G2
2466	G8
2467	H6
2468	H4
2469	H5
2470	D9
2471	E11
2472	D1
3438	I3
3440	A5
3443	H4
3444	H6
3445	H5
3446	H4
3447	H4
3448	H3
3449	E11
3450	A4
3451	B7
3452	H3
3453	A12
3454	B1
3455	C9
3456	C10
3457	D13
3458	D14
3459	E13
3460	F13
3461	E12
3462	E2
3463	E1
3464	F13
3465	A2
3466	H8
3467	F8
3468	F8
3469	E13
3470	F1
3471	E13
3472	G9
3473	G2
3474	G8
3475	G2
3476	H2
3477	H7
3478	B6
3479	H8
3480	H2
3481	H3
3482	H5
3483	H6
3484	H5
3485	I11
3487	I3
3488	I12
3489	I12
3490	H8
3491	D9
3492	E9
3493	H12
3494	H8
3495	H11
3496	H8
3497	I13
3498	D14
3499	A2
4450	C13
4451	B13
4452	F9
4453	I11
4454	A13
4455	G8
4456	G8
4459	F2
4460	F2
5450	A3
6450	E13
6451	E12
7450	A10
7451	D5
7452	F13
7453	F12
7454-A	G11
7454-B	F11
7454-C	F11
7454-D	G11
7455	D13
7456	E12
7457	E9
7458	A1
7460	I12
F401	B3
F402	E13
F403	E8
F404	E8
F405	E8
F406	E8
F407	E8
F408	F8
F409	F13
F410	F8
F411	E13
F412	G1
F413	G13
F414	I2
F415	G13
F416	H13
F417	H13
F418	H13
F419	H13
F420	H8
F421	H13
F422	H3
F423	H13
F424	H13
F425	I13
F426	I13
F427	E8
F428	E8
F429	E8
F430	E8
F432	F8
F434	E8
F436	G13
F440	A2
F441	A13
F442	A13
F443	A13
F444	A13
F445	A13
F446	B13

MP3 BOARD FOR ORIENTATION ONLY


MP3 CD03 Board **SIDE A** (flash version)

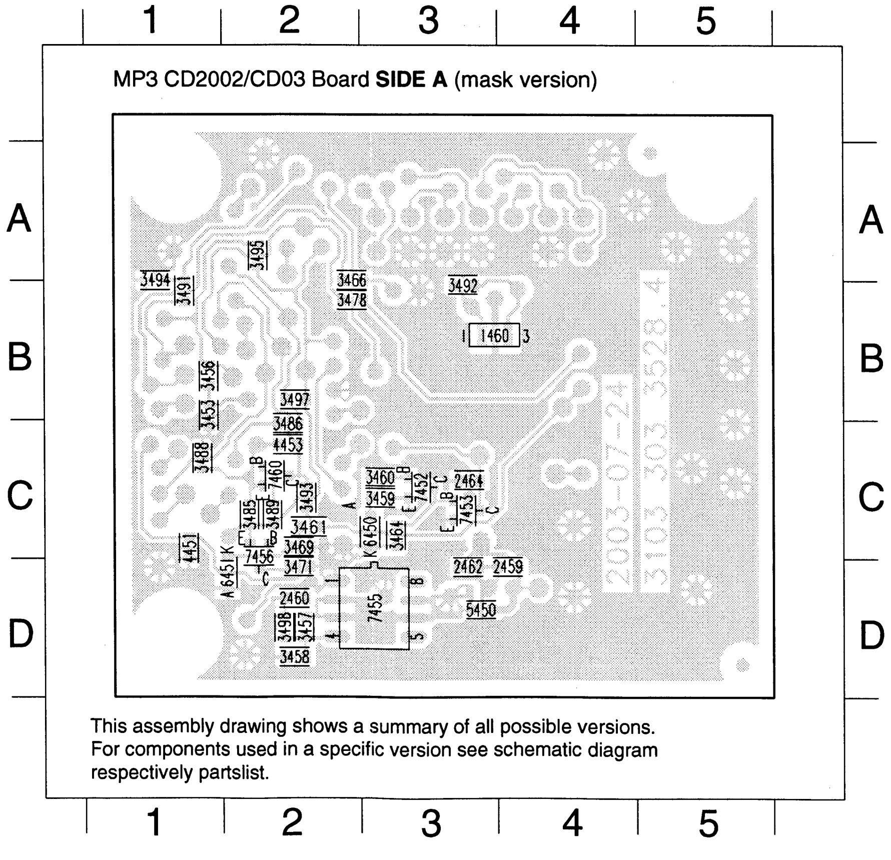
1460	A3	4452	A3
1465	A2	4453	B2
2456	A4	4454	A2
2458	D4	5450	D3
2459	D4	6450	C2
2460	D2	7450	B4
2462	C4	7452	C2
2470	B4	7453	C2
2471	C3	7454	C3
3438	C2	7455	D2
3440	B4	7457	B4
3443	C3	7460	B2
3444	B3		
3445	B3		
3446	C3		
3447	C3		
3448	C3		
3449	C3		
3452	B2		
3453	A4		
3455	B5		
3456	D4		
3457	D3		
3458	D3		
3459	C2		
3460	C2		
3461	B5		
3462	C3		
3463	C3		
3464	C2		
3466	A3		
3472	D2		
3478	B2		
3482	B2		
3483	B2		
3485	B2		
3488	B3		
3489	B3		
3491	B4		
3492	A3		
3493	B2		
3495	B2		
3497	B2		
3498	D3		
4451	A2		


MP3 CD03 Board **SIDE B** (flash version)

MP3 CD03 flash version, 040304

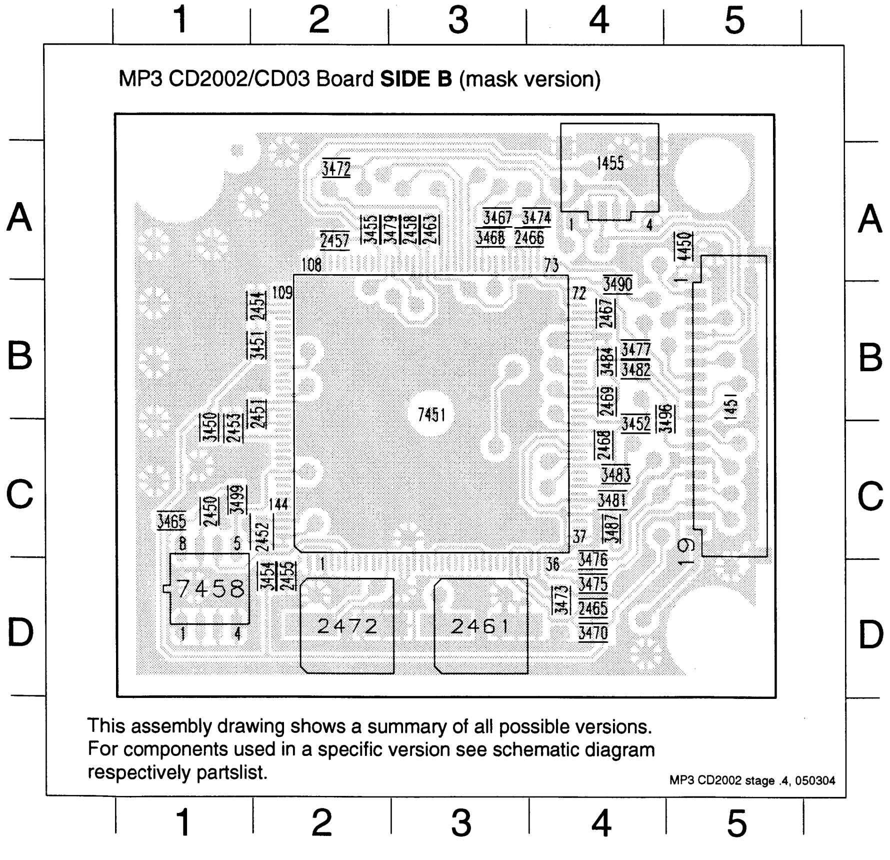
1451	B5	4459	D3
1455	A4	4460	D3
2450	C1	6451	D4
2451	B1	7451	B3
2452	C2	7456	D4
2453	B1	7458	D1
2454	B1		
2455	D2		
2457	A2		
2461	D4		
2463	A3		
2464	D4		
2465	D4		
2466	A3		
2467	B4		
2468	B4		
2469	B4		
2472	D3		
3450	C1		
3451	B1		
3454	D2		
3465	C1		
3467	A3		
3468	A3		
3469	C4		
3470	D3		
3471	C4		
3473	C4		
3474	A3		
3475	C4		
3476	C4		
3477	B4		
3479	A2		
3480	C4		
3481	C4		
3484	B4		
3487	C4		
3490	A4		
3494	A2		
3496	A4		
3499	C1		
4450	A4		
4455	A3		
4456	A3		

1460	B3	3456	B1	3464	C3	3486	C2	3494	A1	5450	D3	7456	C2
2459	D4	3457	D2	3466	A2	3488	C1	3495	A2	6450	C3	7460	C2
2460	D2	3458	D2	3469	C2	3489	C2	3497	B2	6451	D2		
2462	D3	3459	C3	3471	D2	3491	B1	3498	D2	7452	C3		
2464	C3	3460	C3	3478	B2	3492	B3	4451	C1	7453	C3		
3453	B1	3461	C2	3485	C2	3493	C2	4453	C2	7455	D3		


MP3 CD2002/CD03 Board **SIDE A** (mask version)

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

1451	B5	2454	B2	2465	D4	3450	C1	3467	A3	3475	D4	3483	C4	4450	A5
1455	A4	2455	D2	2466	A4	3451	B2	3468	A3	3476	D4	3484	B4	7451	B3
2450	C1	2457	A2	2467	B4	3452	C4	3470	D4	3477	B4	3487	C4	7458	D1
2451	B2	2458	A3	2468	C4	3454	D2	3472	A2	3479	A2	3490	B4		
2452	C2	2461	D3	2469	B4	3455	A2	3473	D4	3481	C4	3496	B4		
2453	C1	2463	A3	2472	D2	3465	C1	3474	A4	3482	B4	3499	C1		


MP3 CD2002/CD03 Board **SIDE B** (mask version)

This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

MP3 CD2002 stage .4, 050304

PERSONAL NOTES:

COMBI & REGULATOR BOARDS

Before production week 444

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Combi Board

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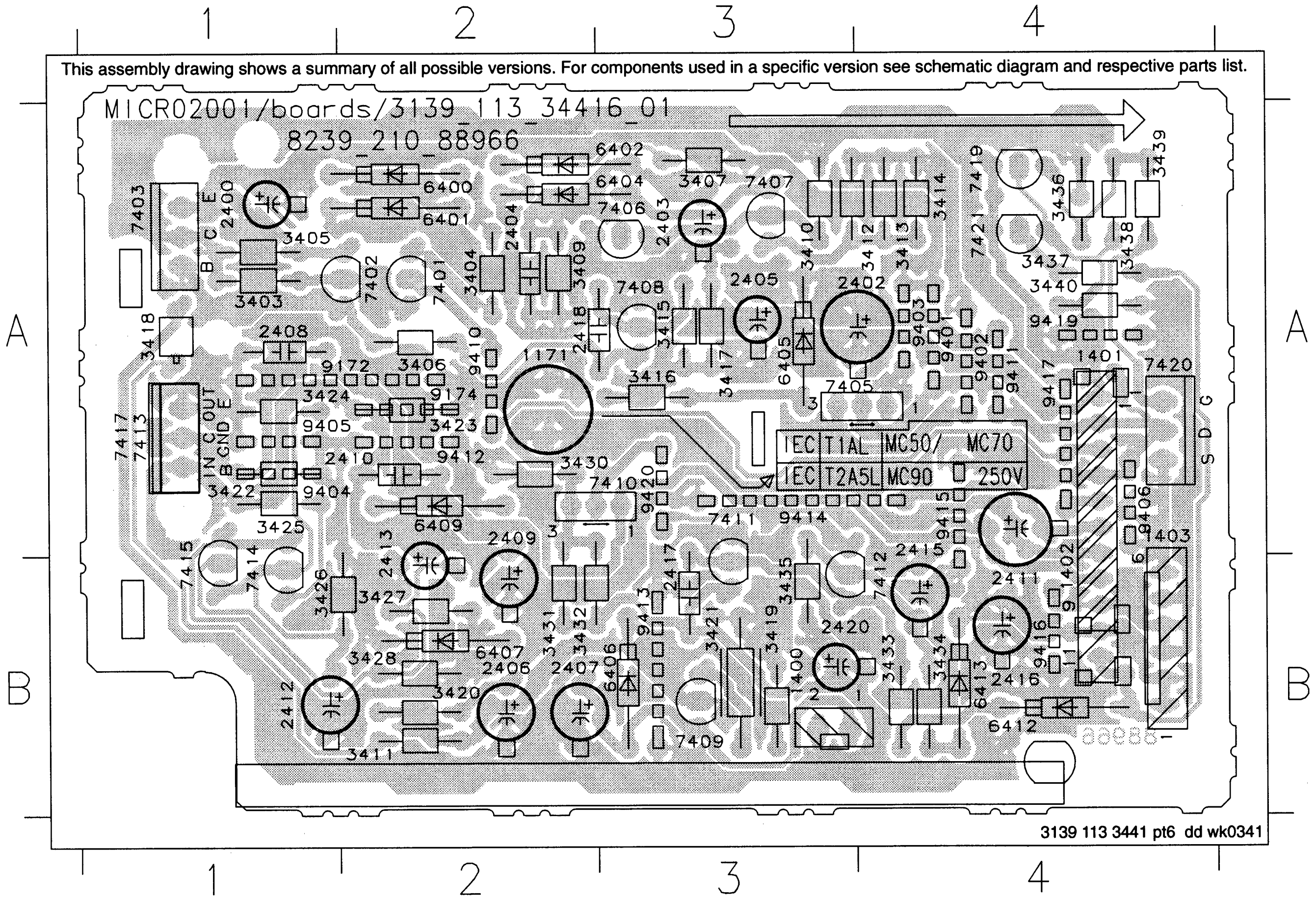
Brief introduction of the Regulator Board

The regulator board provides the following:
a) 12V supply: +12V_A and +12V_M derived from the +A supply
b) 5,6V and 5V supply: +5V6 and 5V_VCD derived from the +A/2 supply

Technical Remarks

REGULATOR BOARD - COMPONENT SIDE VIEW

1171	A2	2408	A1	3404	A2	3417	A3	3430	A2	6401	A2	7405	A3	7419	A4	9411	A4
1400	B3	2409	A2	3405	A1	3418	A1	3431	B2	6402	A3	7406	A3	7420	A4	9412	A2
1401	A4	2410	A2	3406	A2	3419	B3	3432	B2	6404	A3	7407	A3	7421	A4	9413	B3
1402	B4	2411	B4	3407	A3	3420	B2	3433	B4	6405	A3	7408	A3	9172	A2	9414	A3
1403	A4	2412	B1	3409	A2	3421	B3	3434	B4	6406	B3	7409	B3	9174	A2	9415	A4
2400	A1	2413	A2	3410	A3	3422	A1	3435	B3	6407	B2	7410	A3	9401	A4	9416	B4
2402	A4	2415	A4	3411	B2	3423	A2	3436	A4	6409	A2	7411	A3	9402	A4	9417	A4
2403	A3	2416	B4	3412	A4	3424	A1	3437	A4	6412	B4	7412	B4	9403	A4	9419	A4
2404	A2	2417	B3	3413	A4	3425	A1	3438	A4	6413	B4	7413	A1	9404	A1	9420	A3
2405	A3	2418	A2	3414	A4	3426	B1	3439	A4	7401	A2	7414	B1	9405	A1		
2406	B2	2420	B3	3415	A3	3427	B2	3440	A4	7402	A2	7415	B1	9406	A4		
2407	B2	3403	A1	3416	A3	3428	B2	6400	A2	7403	A1	7417	A1	9410	A2		

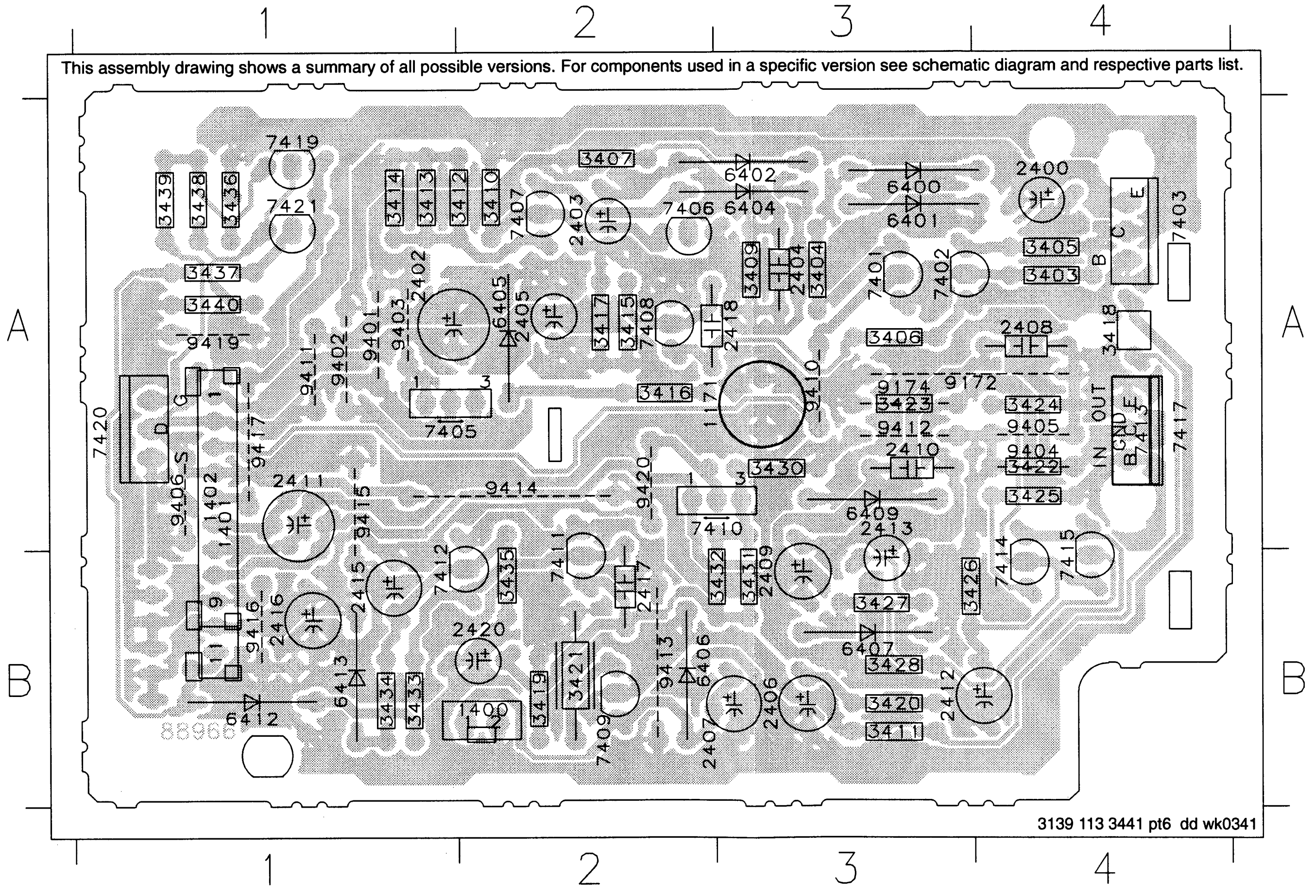


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1
2
3
4
A
B
MICRO2001/boards/3139_113_34416_01
8239_210_88966
IEC T1AL MC50/ MC70
IEC T2A5L MC90 250V
1171
7403
7405
7410
7420
1401
1403
3139 113 3441 pt6 dd wk0341

REGULATOR BOARD - COPPER SIDE VIEW

1171	A2	2409	B3	3405	A4	3418	A4	3431	B3	6402	A3	7406	A2	7420	A1	9412	A3
1400	B2	2410	A3	3406	A3	3419	B2	3432	B3	6404	A3	7407	A2	7421	A1	9413	B2
1401	A1	2411	A1	3407	A2	3420	B3	3433	B1	6405	A2	7408	A2	9172	A3	9414	A2
1402	A1	2412	B3	3409	A3	3421	B2	3434	B1	6406	B2	7409	B2	9174	A3	9415	A1
2400	A4	2413	A3	3410	A2	3422	A4	3435	B2	6407	B3	7410	A3	9401	A1	9416	B1
2402	A1	2415	B1	3411	B3	3423	A3	3436	A1	6409	A3	7411	B2	9402	A1	9417	A1
2403	A2	2416	B1	3412	A2	3424	A4	3437	A1	6412	B1	7412	B1	9403	A1	9419	A1
2404	A3	2417	B2	3413	A1	3425	A4	3438	A1	6413	B1	7413	A4	9404	A4	9420	A2
2405	A2	2418	A3	3414	A1	3426	B3	3439	A1	7401	A3	7414	B4	9405	A4		
2406	B3	2420	B2	3415	A2	3427	B3	3440	A1	7402	A3	7415	B4	9406	A1		
2407	B2	3403	A4	3416	A2	3428	B3	6400	A3	7403	A4	7417	A4	9410	A3		
2408	A4	3404	A3	3417	A2	3430	A3	6401	A3	7405	A1	7419	A1	9411	A1		

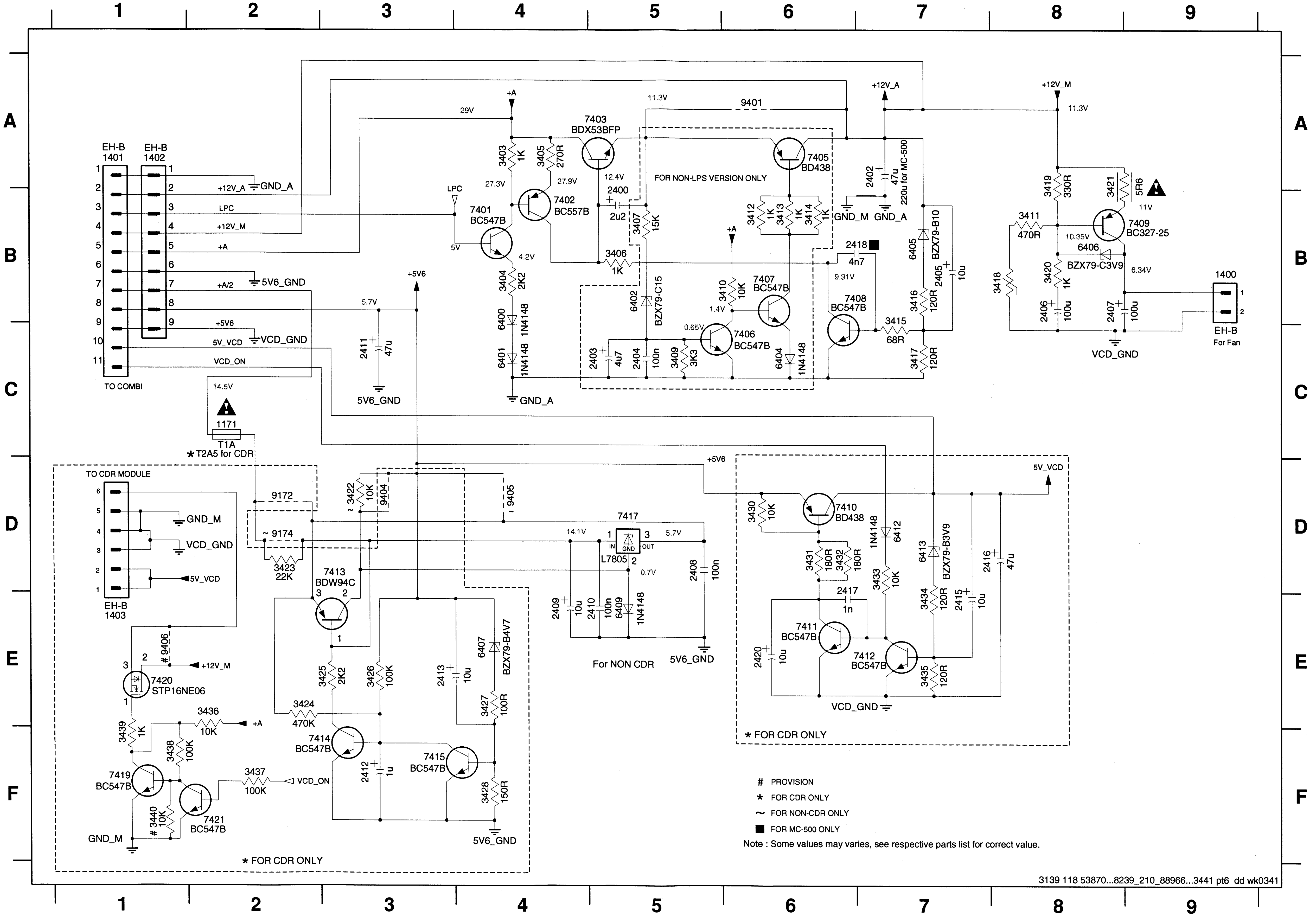


This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram and respective parts list.

1
2
3
4
A
B
88966
1171
7403
7405
7410
7420
1401
1402
3139 113 3441 pt6 dd wk0341

REGULATOR BOARD - CIRCUIT DIAGRAM

1171	C2
1400	B9
1401	A1
1402	A1
1403	E1
2400	B5
2402	A7
2403	C5
2404	C5
2405	B7
2406	B8
2407	B8
2408	D5
2409	E4
2410	E5
2411	C3
2412	F3
2413	E3
2415	E7
2416	D7
2417	D6
2418	B7
2420	E6
3403	A4
3404	B4
3405	A4
3406	B5
3407	B5
3409	C5
3410	B6
3411	B8
3412	B6
3413	B6
3414	B6
3415	C7
3416	B7
3417	C7
3418	B8
3419	A8
3420	B8
3421	A8
3422	D3
3423	D2
3424	E2
3425	E3
3426	E3
3427	E4
3428	F4
3430	D6
3431	D6
3432	D6
3433	D7
3434	E7
3435	E7
3436	E2
3437	F2
3438	F1
3439	F1
3440	F1
6400	B4
6401	C4
6402	B5
6404	C6
6405	B7
6406	B8
6407	E4
6409	E5
6412	D7
6413	D7
7401	B4
7402	B4
7403	A4
7405	A6
7406	C6
7407	B6
7408	B7
7409	B9
7410	D7
7411	E6
7412	E7
7413	D3
7414	F3
7415	F3
7417	D5
7419	F1
7420	E1
7421	F2
9172	D2
9174	D2
9401	A6
9404	D3
9405	D4
9406	E1


1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
EH-B 1401
EH-B 1402
+12V_A
GND_A
LPC
+12V_M
+A
+A/2
5V6_GND
+5V6
VCD_GND
5V_VCD
VCD_ON
TO COMBI
29V
+A
7403 BDX53BFP
11.3V
9401
+12V_A
+12V_M
11.3V
3403 1K
3405 270R
27.3V
27.9V
12.4V
2400 2u2
7401 BC547B
7402 BC557B
5V
4.2V
3404 2K2
6400 1N4148
6401 1N4148
GND_A
3406 1K
3407 15K
6402 BZX79-C15
FOR NON-LPS VERSION ONLY
7405 BD438
3412 1K
3413 1K
3414 1K
2402 47u 220u for MC-500
GND_M
GND_A
2418 4n7
9.91V
7407 BC547B
3410 10K
1.4V
0.65V
7406 BC547B
7408 BC547B
3415 68R
2403 4u7
2404 100n
3409 3K3
6404 1N4148
6405 BZX79-B10
2405 10u
3416 120R
3417 120R
3419 330R
3421 5R6
11V
3411 470R
10.35V
7409 BC327-25
6406 BZX79-C3V9
6.34V
3418
3420 1K
2406 100u
2407 100u
VCD_GND
1400
EH-B For Fan
5.7V
2411 47u
5V6_GND
14.5V
1171 T1A
★T2A5 for CDR
TO CDR MODULE
EH-B 1403
GND_M
VCD_GND
5V_VCD
9172
9174
3423 22K
3422 10K
9404
9405
7413 BDW94C
7417 L7805
14.1V
5.7V
0.7V
IN GND OUT
2408 100n
2409 10u
2410 100n
6409 1N4148
For NON CDR
5V6_GND
9406
+12V_M
7420 STP16NE06
3439 1K
3436 10K
3438 100K
7419 BC547B
7421 BC547B
3440 10K
3437 100K
VCD_ON
GND_M
3425 2K2
3426 100K
3424 470K
7414 BC547B
2412 1u
7415 BC547B
2413 10u
6407 BZX79-B4V7
3427 100R
3428 150R
5V6_GND
★ FOR CDR ONLY
+5V6
5V_VCD
3430 10K
7410 BD438
6412 1N4148
3431 180R
3432 180R
3433 10K
6413 BZX79-B3V9
2416 47u
2417 1n
7411 BC547B
7412 BC547B
2420 10u
3434 120R
2415 10u
3435 120R
VCD_GND
★ FOR CDR ONLY

PROVISION

★ FOR CDR ONLY

~ FOR NON-CDR ONLY

■ FOR MC-500 ONLY

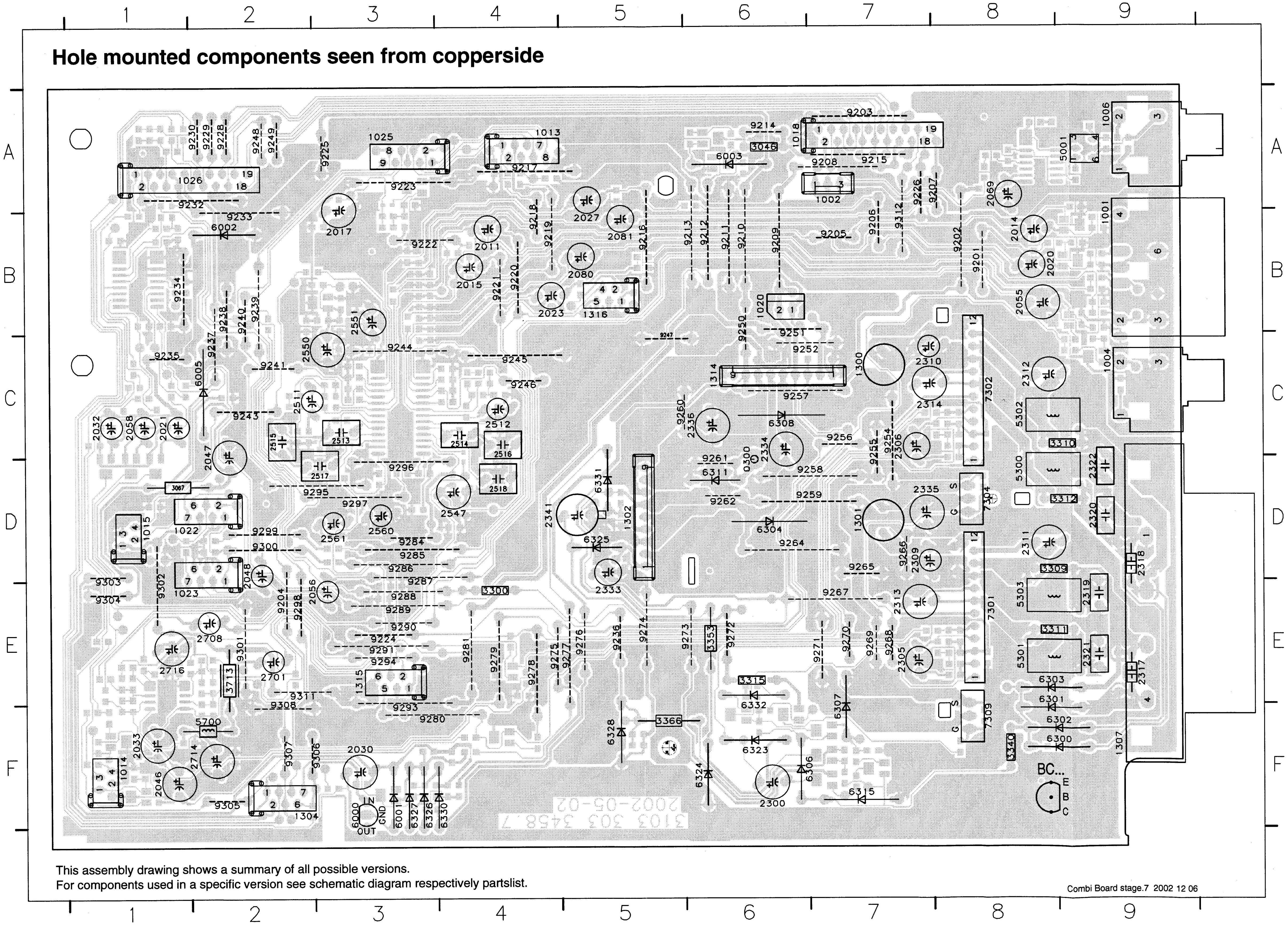
Note : Some values may varies, see respective parts list for correct value.

3139 118 53870...8239_210_88966...3441 pt6 dd wk0341

COMBI BOARD

0300	D6
1001	B9
1002	A7
1004	C9
1006	A9
1013	A4
1014	F1
1015	D1
1018	A6
1020	B6
1022	D1
1023	E1
1025	A3
1026	A2
1300	C7
1301	D7
1302	D5
1304	F2
1307	F9
1314	C6
1315	E3
1316	B5
2011	B4
2014	B8
2015	B4
2017	B3
2020	B8
2021	C1
2023	B4
2027	B5
2030	F3
2032	C1
2033	F1
2046	F1
2047	C2
2048	D2
2055	B8
2056	E2
2058	C1
2069	A8
2080	B5
2081	B5
2300	F6
2305	E7
2306	C7
2309	D7
2310	C7
2311	D8
2312	C8
2313	E7
2314	C7
2317	E9
2318	D9
2319	E9
2320	D9
2321	E9
2322	D9
2333	E5
2334	C6
2335	D7
2336	C6
2341	D4
2511	C2
2512	C4
2513	C3
2514	C4
2515	C2
2516	C4
2517	D3
2518	D4
2547	D4
2550	C2
2551	B3
2560	D3
2561	D3
2701	E2
2708	E2
2714	F2
2716	E1
3046	A6
3067	D1
3300	E4
3309	D8
3310	C9
3311	E8
3312	D9
3315	E6
3340	F8
3353	E6
3366	F5
3713	E2
5001	A9
5300	D8
5301	E8
5302	C8
5303	E8
5700	F2
6000	F3
6001	F3
6002	B2
6003	A6
6005	C2
6300	F9
6301	E8
6302	F9
6303	E8
6304	D6
6306	F6
6307	F7
6308	C6
6311	D6
6315	F7
6323	F6
6324	F6
6325	D5
6326	F3
6327	F3
6328	F5
6330	F4
6331	D5
6332	F6
7301	E8
7302	C8
7304	D8
7309	F8
9201	B8
9202	B8
9203	A7
9204	E2
9205	B7
9206	B7
9207	A8
9208	A7
9209	B6
9210	B6
9211	B6
9212	B6
9213	B6
9214	A6
9215	A7
9216	B5
9217	A4
9218	B4
9219	B4
9220	B4
9221	B4
9222	B3
9223	A3
9224	E3
9225	A3
9226	A7
9228	A2
9229	A2
9230	A2
9232	A2
9233	B2
9234	B1
9235	C1
9236	E5
9237	C2
9238	B2
9239	B2
9240	B2
9241	C2
9243	C2
9244	C3
9245	C4
9246	C4
9247	C5
9248	A2
9249	A2
9250	B6
9251	C6
9252	C6
9254	C7
9255	C7
9256	C7
9257	C6
9258	D7
9259	D6
9260	C5
9261	D6
9262	D6
9264	D6
9265	D7
9266	D7
9267	E7
9268	E7
9269	E7
9270	E7
9271	E7
9272	E6
9273	E5
9274	E5
9275	E4
9276	E5
9277	E5
9278	E4
9279	E4
9280	F3
9281	E4
9284	D3
9285	D3
9286	D3
9287	E3
9288	E3
9289	E3
9290	E3
9291	E3
9293	F3
9294	E3
9295	D3
9296	D3
9297	D3
9298	E2
9299	D2
9300	D2
9301	E2
9302	E1
9303	D1
9304	E1
9305	F2
9306	F3
9307	F2
9308	E2
9311	E2
9312	B7

Hole mounted components seen from copperside



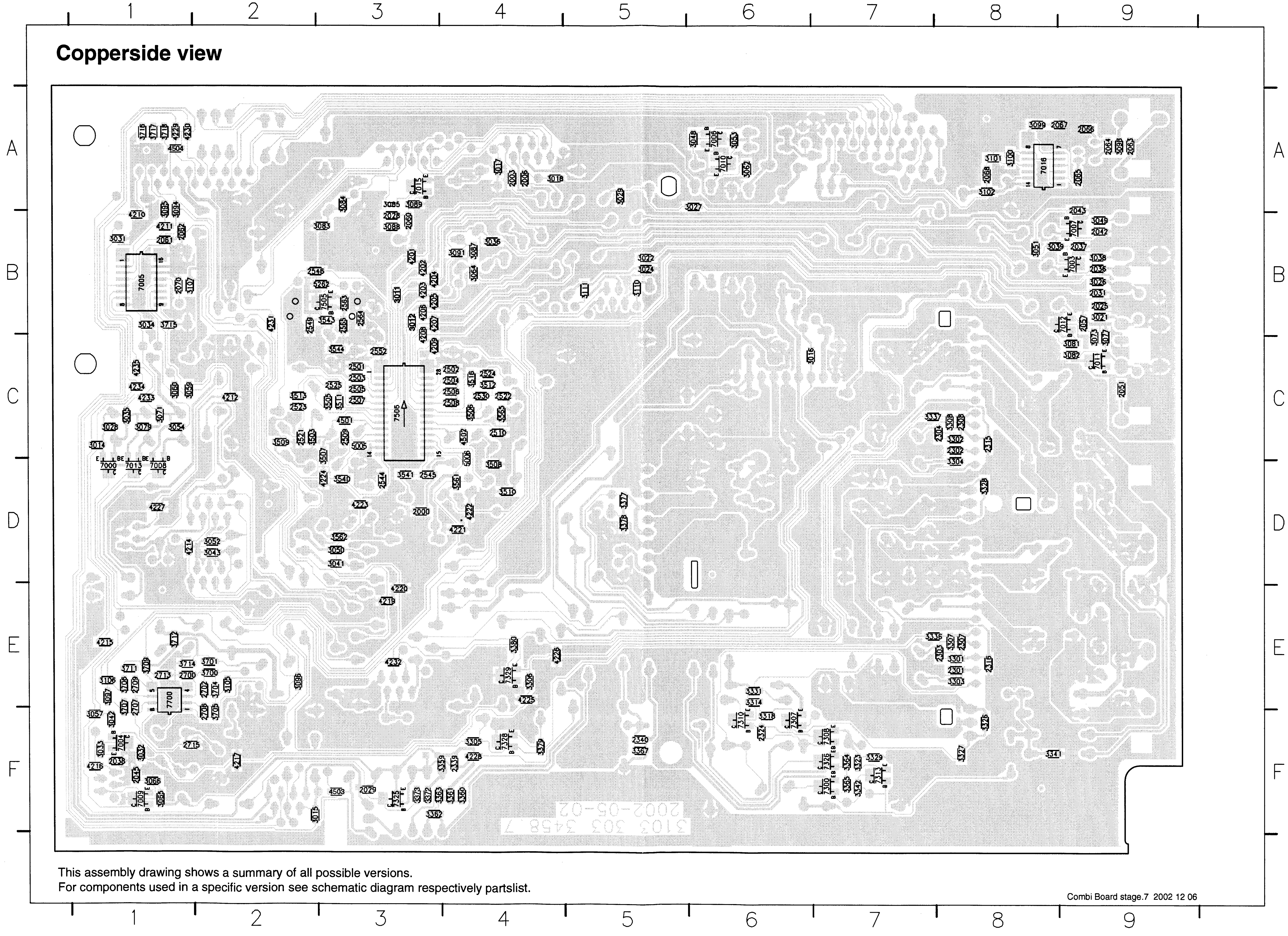
This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

Combi Board stage.7 2002 12 06

COMBI BOARD

2000	D3
2003	A4
2006	A4
2025	B9
2028	B3
2029	F3
2031	B9
2036	B9
2037	B9
2038	F1
2042	B9
2043	A9
2045	F1
2051	C9
2057	B9
2060	B3
2061	B1
2062	B1
2063	A9
2064	A9
2065	A9
2066	A9
2067	A9
2068	A8
2070	B1
2301	E8
2302	C8
2303	E8
2304	C8
2307	E8
2308	C8
2315	C8
2316	E8
2324	F6
2339	F4
2340	F5
2501	C3
2502	C4
2503	C3
2504	C4
2505	C3
2506	C4
2507	C3
2508	C4
2509	C3
2510	C4
2521	C2
2522	C4
2523	C2
2524	C4
2525	C3
2530	C4
2544	D3
2545	D3
2546	B2
2549	B2
2552	C3
2563	B3
2564	B3
2565	B3
2700	E1
2702	E2
2706	F2
2707	F1
2709	E1
2713	E1
2715	F1
3011	B3
3012	B3
3014	C1
3015	F2
3016	C6
3017	A4
3018	A4
3021	B9
3022	B5
3024	B5
3026	B9
3027	A6
3028	C1
3029	A5
3031	B1
3032	F1
3033	F1
3034	B1
3035	C1
3036	B4
3038	B9
3039	B8
3041	D3
3042	F1
3043	D2
3048	A6
3049	B9
3050	D3
3051	B8
3052	D2
3053	A6
3054	C1
3057	F1
3059	C1
3060	C1
3062	A6
3064	B4
3065	F1
3066	F1
3071	C1
3073	C9
3077	C9
3079	C1
3081	C9
3082	C9
3083	B3
3084	A3
3085	A3
3087	B4
3088	B3
3089	A3
3091	B4
3094	A1
3095	A1
3096	E2
3097	E1
3098	A9
3099	A8
3100	A8
3101	A8
3102	A8
3105	E2
3106	E1
3107	B1
3110	B5
3111	B5
3301	E8
3302	C8
3303	E8
3304	D8
3305	F4
3306	E4
3307	E8
3308	C8
3314	E6
3318	F6
3323	F7
3326	F8
3327	F8
3328	D8
3329	F7
3331	E6
3336	E7
3337	C7
3341	F8
3342	F7
3359	F3
3360	F4
3361	F3
3362	F3
3363	F3
3364	F7
3365	F7
3367	F5
3372	F3
3373	F3
3377	D5
3378	D5
3379	F4
3380	E4
3503	C2
3505	C3
3506	C4
3507	C3
3508	D4
3509	C2
3510	D4
3511	C3
3512	C4
3513	C2
3516	C4
3540	D3
3541	D3
3543	B3
3544	C3
3561	D4
3562	D3
3565	C4
3700	E2
3701	E2
3704	E2
3705	F2
3706	E1
3707	F1
3709	E1
3711	E1
3712	E1
3714	E1
3715	B1
3716	A1
3717	A1
3718	A1
4201	B3
4202	B3
4203	B3
4204	B3
4205	B3
4206	B3
4207	B3
4208	C3
4209	C3
4210	B1
4211	B1
4212	C2
4214	D1
4215	E1
4216	F1
4217	F2
4219	E3
4220	E3
4221	D4
4222	D4
4223	D3
4224	D3
4225	E4
4226	E4
4227	D1
4228	F4
4229	A1
4230	A1
4231	B2
4232	E3
4233	C1
4234	C1
4235	C1
4501	C3
4502	C4
4503	F3
4504	A1
5005	C3
5006	D4
5262	B3
7000	D1
7003	B9
7004	F1
7005	B1
7006	A6
7007	B9
7008	D1
7009	F1
7010	A6
7011	C9
7012	B9
7013	D1
7015	A3
7016	A8
7300	F7
7307	F6
7308	F7
7310	F6
7313	F7
7325	F3
7326	F7
7328	F4
7329	E4
7505	B3
7506	C3
7700	E1

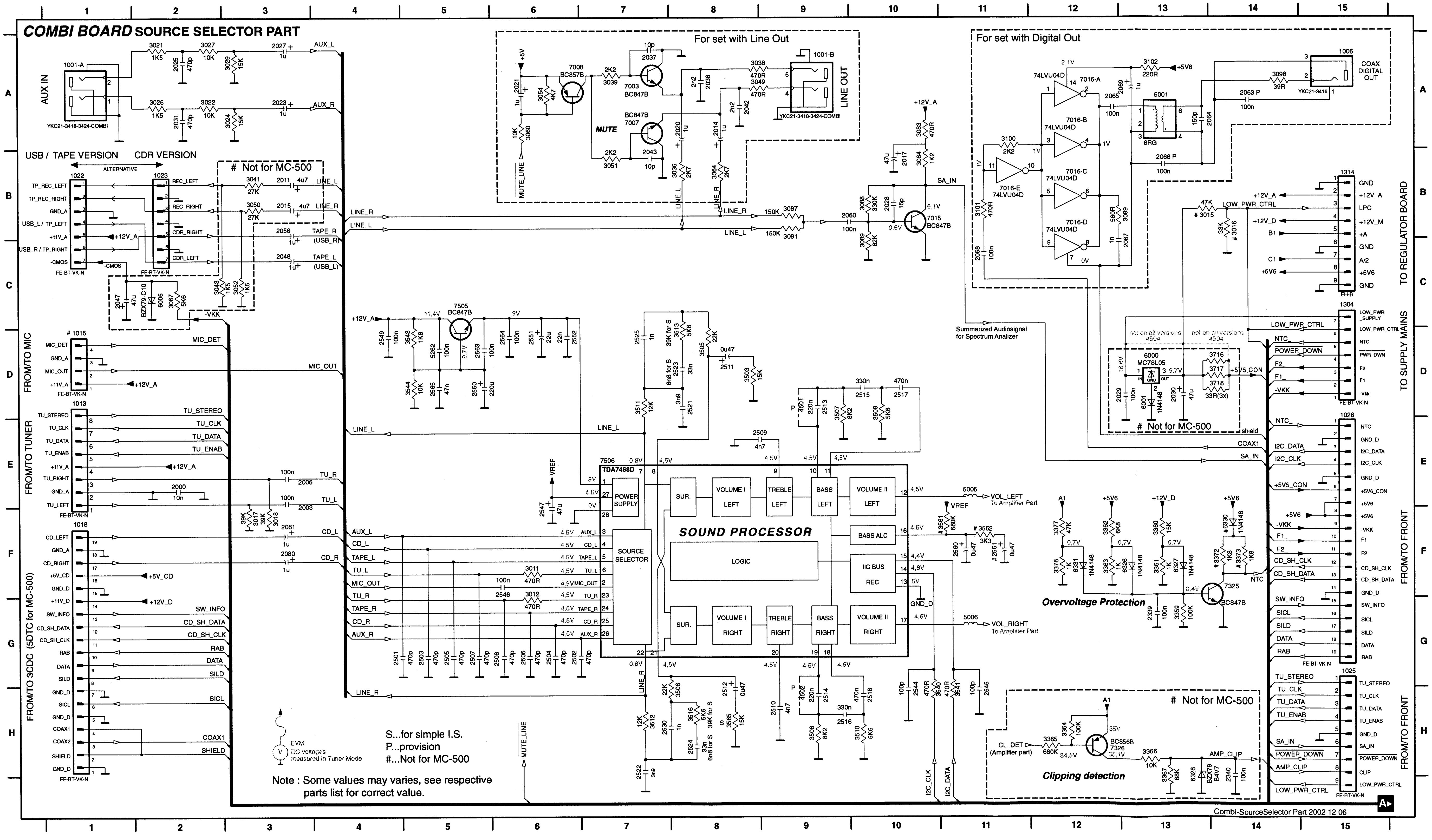
Copperside view



This assembly drawing shows a summary of all possible versions.
For components used in a specific version see schematic diagram respectively partslist.

COMBI CIRCUIT - SOURCE SELECTOR PART

1001-A	A1
1001-B	A9
1002	A15
1006	A15
1013	D1
1015	D1
1018	F1
1020	H13
1022	B1
1023	B2
1025	G15
1026	E15
1304	C15
1314	B15
1316	A4
2000	E2
2003	E3
2006	E3
2011	B3
2014	A8
2015	B3
2017	B9
2020	A8
2021	A6
2023	A3
2025	A2
2027	A3
2028	B10
2029	D13
2030	D13
2031	A2
2036	A8
2037	A7
2042	A8
2043	B7
2047	C1
2048	C3
2056	B3
2060	B9
2063	A14
2064	A13
2065	A12
2066	B13
2067	C13
2068	C11
2069	A13
2080	F3
2081	F3
2339	G13
2501	G4
2502	G6
2503	G5
2504	G6
2505	G5
2506	G6
2507	G5
2508	G6
2509	E8
2510	H9
2511	D8
2512	H8
2513	D9
2514	H9
2515	D10
2516	H9
2517	D10
2518	H10
2521	D8
2522	H7
2523	D8
2524	H8
2525	D7
2530	H7
2544	H10
2545	H11
2546	F6
2547	E6
2549	D4
2550	D5
2551	D6
2552	D6
2560	D11
2561	D11
2563	D5
2564	D6
2565	D5
3015	D14
3016	D14
3017	E3
3018	E3
3021	A2
3022	A3
3024	A3
3026	A2
3027	A3
3029	A3
3036	B8
3038	A8
3039	A7
3041	B3
3043	A2
3049	A8
3050	B3
3051	B7
3052	B3
3054	A6
3060	A6
3064	B8
3067	C2
3083	B9
3084	B9
3085	B10
3087	B9
3088	B10
3089	C10
3091	C9
3098	A14
3099	B13
3100	A11
3101	B11
3102	A13
3110	A3
3111	A3
3359	G13
3360	F13
3361	G13
3362	F13
3363	G12
3377	G12
3378	G12
3503	D8
3505	D8
3506	H8
3507	D9
3508	H9
3509	D10
3510	H10
3511	D7
3512	H7
3513	D8
3516	H8
3540	H10
3541	H11
3543	D5
3544	D5
3561	D10
3562	D11
3565	H8
3716	D14
3717	E14
3718	E14
4501	D9
4502	H9
4503	D13
4504	D14
5001	A13
5262	D5
6000	D13
6001	D13
6005	C2
6326	G13
6327	G13
6331	G12
7003	A7
7007	A7
7008	A6
7015	B10
7016-A	A12
7016-B	A12
7016-C	B12
7016-D	B12
7016-E	B11
7016-F	A11
7325	G14
7505	C5
7506	E7


COMBI BOARD SOURCE SELECTOR PART
AUX IN
1001-A
YKC21-3418-3424-COMBI
AUX_L
AUX_R
USB / TAPE VERSION
CDR VERSION
ALTERNATIVE
# Not for MC-500
For set with Line Out
MUTE
LINE OUT
1001-B
For set with Digital Out
COAX DIGITAL OUT
1006
74LVU04D
TO REGULATOR BOARD
TO SUPPLY MAINS
FROM/TO MIC
FROM/TO TUNER
FROM/TO 3CDC (5DTC for MC-500)
FROM/TO FRONT
TDA7468D
SOUND PROCESSOR
POWER SUPPLY
SOURCE SELECTOR
LOGIC
SUR.
VOLUME I LEFT
TREBLE LEFT
BASS LEFT
VOLUME II LEFT
BASS ALC
IIC BUS
REC
VOLUME I RIGHT
TREBLE RIGHT
BASS RIGHT
VOLUME II RIGHT
VOL_LEFT To Amplifier Part
VOL_RIGHT To Amplifier Part
Summarized Audiosignal for Spectrum Analizer
Overvoltage Protection
Clipping detection
CL_DET (Amplifier part)
MC78L05
# Not for MC-500
EVM
DC voltages measured in Tuner Mode
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H

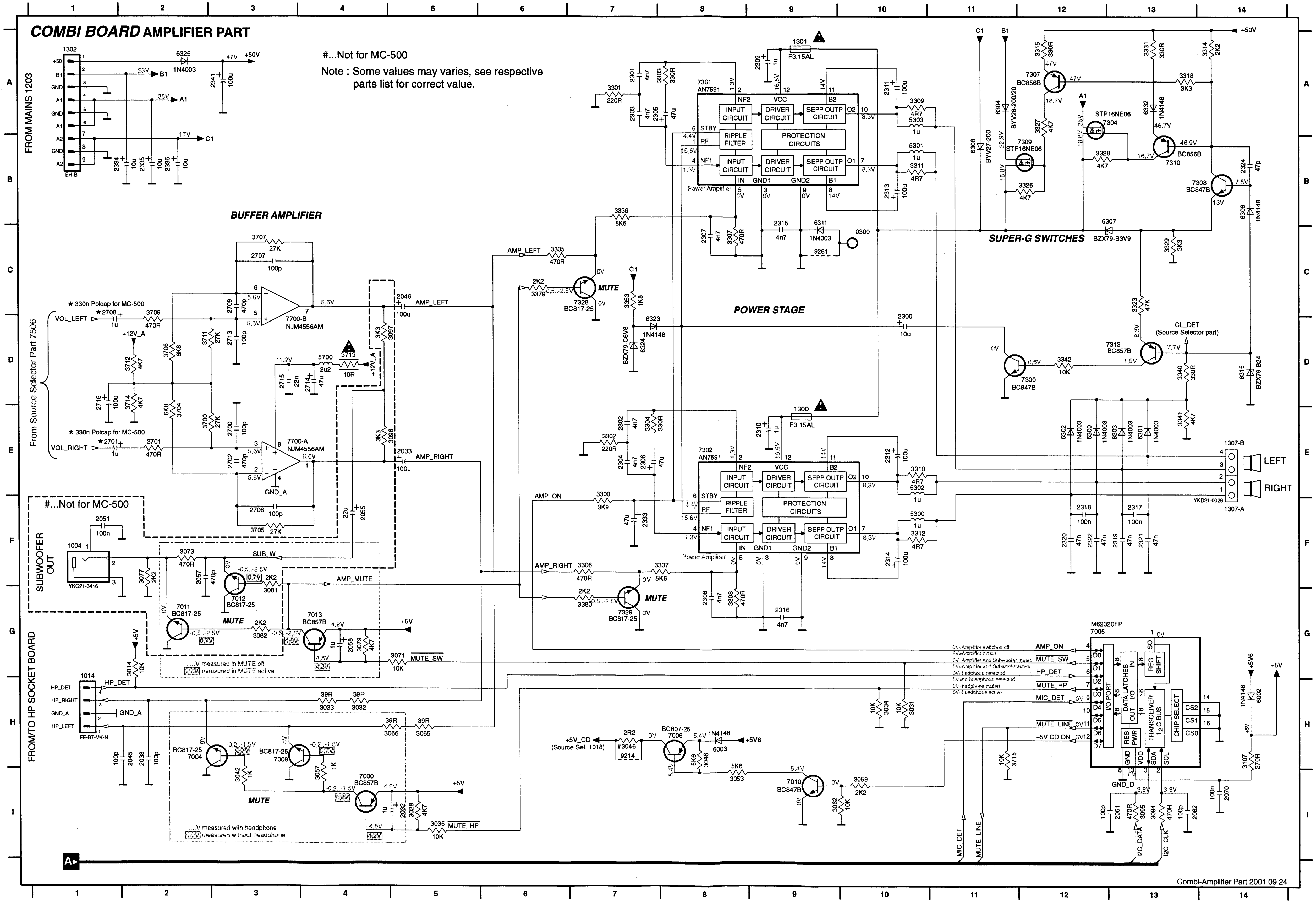
S...for simple I.S.
P...provision
#...Not for MC-500

Note : Some values may varies, see respective parts list for correct value.

Combi-SourceSelector Part 2002 12 06

COMBI CIRCUIT - AMPLIFIER PART

0300	C10
1004	F1
1014	G1
1300	E9
1301	A9
1302	A1
1307-A	F14
1307-B	E14
1315	B1
2032	I5
2033	E5
2038	H2
2045	H2
2046	C5
2051	F1
2055	F4
2057	F2
2058	G4
2061	I13
2062	I13
2070	I14
2300	D9
2301	A7
2302	E7
2303	A7
2304	E7
2305	A7
2306	E7
2307	C8
2308	G8
2309	A9
2310	E9
2311	A10
2312	E10
2313	B10
2314	F10
2315	B9
2316	G9
2317	F13
2318	F12
2319	F13
2320	F12
2321	F13
2322	F12
2324	B14
2333	F7
2334	B1
2335	B2
2336	B2
2340	C14
2341	A3
2700	E3
2701	E1
2702	E3
2706	F3
2707	C3
2708	D1
2709	C3
2713	D3
2714	E3
2715	D4
2716	D1
3014	G2
3028	I5
3031	H10
3032	H4
3033	H4
3034	H10
3035	I5
3042	H3
3046	I7
3048	I8
3053	I8
3057	H4
3059	I10
3062	I9
3065	H5
3066	H5
3071	G4
3073	F2
3077	F2
3079	G4
3081	G3
3082	G3
3094	I13
3095	I13
3096	E4
3097	D4
3105	C2
3106	C2
3107	H14
3300	F7
3301	A7
3302	E7
3303	A8
3304	E7
3305	C6
3306	F7
3307	C8
3308	G8
3309	A10
3310	E10
3311	B10
3312	F10
3314	A14
3315	A12
3318	A13
3323	C13
3326	B12
3327	A12
3328	B12
3329	C13
3331	A13
3336	B7
3337	F8
3340	D13
3341	E13
3342	D11
3353	C7
3364	C12
3365	D12
3366	C13
3367	C14
3379	C6
3380	G7
3700	E2
3701	E2
3704	E2
3705	F3
3706	D2
3707	C3
3709	D2
3711	D2
3712	D2
3713	D4
3714	D2
3715	H11
5300	F10
5301	B10
5302	E10
5303	A10
5700	D3
6002	H14
6003	I8
6300	E12
6301	E13
6302	E12
6303	E13
6304	A11
6306	B14
6307	B13
6308	B11
6311	B9
6315	D14
6323	D7
6324	D7
6325	A2
6328	C13
6332	A13
7000	H4
7004	H2
7005	G12
7006	I8
7009	H3
7010	I9
7011	G2
7012	G3
7013	G4
7300	D9
7301	A8
7302	E8
7304	A13
7307	A12
7308	B14
7309	B12
7310	B13
7313	D12
7326	C12
7328	C6
7329	G7
7700-A	E3
7700-B	D3
9214	I7
9261	C9


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H I
COMBI BOARD AMPLIFIER PART
#...Not for MC-500
Note : Some values may varies, see respective parts list for correct value.
FROM MAINS 1203
1302
+50
B1
GND
A1
A2
EH-B
6325
1N4003
47V
+50V
23V
35V
17V
C1
2341
100u
2334
10u
2335
2336
BUFFER AMPLIFIER
3707
27K
2707
100p
From Source Selector Part 7506
VOL_LEFT
VOL_RIGHT
★ 330n Polcap for MC-500
★2708
★2701
3709
470R
3701
+12V_A
7700-B
NJM4556AM
7700-A
NJM4556AM
5.6V
GND_A
2706
100p
3705
27K
5700
2u2
3713
10R
2046
100u
AMP_LEFT
2033
100u
AMP_RIGHT
3097
3K3
3096
3K3
2055
22u
#...Not for MC-500
2051
100n
1004
SUBWOOFER OUT
YKC21-3416
3073
470R
SUB_W
3077
2K2
2057
470p
7012
BC817-25
2K2
3081
AMP_MUTE
7011
BC817-25
MUTE
2K2
3082
7013
BC857B
+5V
3071
10K
MUTE_SW
....V measured in MUTE off
....V measured in MUTE active
FROM/TO HP SOCKET BOARD
1014
HP_DET
HP_RIGHT
GND_A
HP_LEFT
FE-BT-VK-N
3014
10K
39R
3033
3032
3066
3065
BC817-25
7004
7009
3042
1K
3057
7000
BC857B
3035
10K
MUTE_HP
....V measured with headphone
....V measured without headphone
2045
100p
2038
AMP_LEFT
3305
470R
2K2
3379
7328
BC817-25
MUTE
C1
3353
1K8
6323
1N4148
BZX79-C6V8
6324
3336
5K6
3301
220R
1301
F3.15AL
7301
AN7591
NF2
VCC
B2
INPUT CIRCUIT
DRIVER CIRCUIT
SEPP OUTP CIRCUIT
STBY
RF
RIPPLE FILTER
PROTECTION CIRCUITS
NF1
IN
GND1
GND2
B1
Power Amplifier
3309
4R7
5303
1u
5301
3311
2315
4n7
6311
1N4003
9261
0300
POWER STAGE
2300
10u
1300
F3.15AL
7302
AN7591
3302
220R
AMP_ON
3300
3K9
AMP_RIGHT
3306
470R
3337
5K6
2K2
3380
7329
BC817-25
MUTE
3310
5302
5300
3312
2316
4n7
SUPER-G SWITCHES
C1
B1
+50V
3315
330R
3331
330R
3314
2K2
7307
BC856B
3318
3K3
6304
BYV28-200/20
6308
BYV27-200
A1
STP16NE06
7304
7309
STP16NE06
6332
1N4148
3327
4K7
3328
4K7
3326
4K7
7310
BC856B
7308
BC847B
2324
47p
6306
1N4148
6307
BZX79-B3V9
3329
3K3
3323
47K
CL_DET
(Source Selector part)
7313
BC857B
7300
BC847B
3342
10K
3340
330R
6315
BZX79-B24
3341
4K7
6302
6300
6303
6301
1N4003
2318
100n
2317
100n
2320
2322
2319
2321
47n
1307-B
1307-A
YKD21-0026
LEFT
RIGHT
M62320FP
7005
0V=Amplifier switched off
5V=Amplifier active
0V=Amplifier and Subwoofer muted
5V=Amplifier and Subwoofer active
0V=headphone detected
5V=no headphone detected
0V=headphone muted
5V=headphone active
AMP_ON
MUTE_SW
HP_DET
MUTE_HP
MIC_DET
MUTE_LINE
+5V CD ON
I/O PORT
DATA LATCHES
REG SHIFT
TRANSCEIVER I2C BUS
CHIP SELECT
RES PWR
GND
VDD
SDA
SCL
CS0
CS1
CS2
3034
10K
3031
10K
3715
10K
+5V_CD
(Source Sel. 1018)
2R2
#3046
9214
BC807-25
7006
1N4148
6003
+5V6
5K6
3048
3053
7010
BC847B
3059
2K2
3062
10K
GND_D
2061
100p
3095
470R
3094
470R
2062
100p
2070
100n
I2C_DATA
I2C_CLK
MIC_DET
MUTE_LINE
1N4148
6002
+5V6
+5V
3107
270R
A
Combi-Amplifier Part 2001 09 24

MECHANICAL PARTS LIST

0202	4822 492 11735	SPRING TRANS

ELECTRICAL PARTS LIST - REGULATOR BOARD

MISCELLANEOUS

1171	4822 071 51002	⚠ Fuse RAD LT 1A 250V

CAPACITORS

2402	2022 020 00625	220uF 20% 16V
2405	4822 124 11947	10uF 20% 16V
2406	4822 124 41643	100uF 20% 16V
2407	4822 124 41643	100uF 20% 16V
2408	2020 561 90365	100nF +80/-20% 50V
2409	4822 124 40248	10uF 20% 63V
2410	2020 561 90365	100nF +80/-20% 50V
2411	4822 124 12233	47uF 20% 25V
2418	4822 126 11714	4,7nF 20%

RESISTORS

3403	4822 050 11002	1k 1% 0,4W
3404	4822 116 52256	2k2 5% 0,5W
3405	4822 116 83876	270R 5% 0,5W
3406	4822 050 11002	1k 1% 0,4W
3411	4822 116 83883	470R 5% 0,5W
3415	4822 116 52199	68R 5% 0,5W
3416	4822 116 52206	120R 5% 0,5W
3417	4822 116 52206	120R 5% 0,5W
3418	4822 117 12063	NTC DC 5W 10k 5%
3419	4822 116 52219	330R 5% 0,5W
3420	4822 050 11002	1k 1% 0,4W
3421	4822 052 10568	⚠ 5R6 5% 0,33W
3422	4822 050 21003	10k 1% 0,6W

DIODES

6400	4822 130 30621	1N4148
6401	4822 130 30621	1N4148
6405	4822 130 61219	BZX79-B10
6406	4822 130 34174	BZX79-C4V7
6409	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7401	4822 130 40959	BC547B
7402	4822 130 44568	BC557B
7403	9322 139 23687	TRA POW BDX53BFP
7408	4822 130 40959	BC547B
7409	4822 130 41246	BC327-25
7417	4822 209 31841	IC L7805CP

Note : Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - COMBI BOARD

MISCELLANEOUS

1001	4822 265 20553	Socket Cinch 2P - Aux in
1013	4822 265 11515	Flex Connector 8P
1014	4822 267 10733	Flex Connector 4P
1018	4822 265 10981	Flex Connector 15P
1022	4822 267 10953	Flex Connector 7P
1025	2422 025 14518	Flex Connector 9P
1026	4822 265 11553	Flex Connector 19P
1300	4822 252 11225	⚠ Fuse RAD LF 3,15A 250V
1301	4822 252 11225	⚠ Fuse RAD LF 3,15A 250V
1304	4822 267 10953	Flex Connector 7P
1307	4822 267 31176	Speaker Terminal 4P

CAPACITORS

2000	5322 126 11583	10nF 10% 50V
2003	2238 586 59812	100nF +80/-20% 50V
2006	2238 586 59812	100nF +80/-20% 50V
2011	2022 020 00734	1uF 20% 50V
2015	2022 020 00734	1uF 20% 50V
2023	2022 020 00734	1uF 20% 50V
2025	4822 126 13881	470pF 5% 50V
2027	2022 020 00734	1uF 20% 50V
2031	4822 126 13881	470pF 5% 50V
2032	4822 124 22651	1uF 20% 50V
2033	4822 124 23052	100uF 20% 16V
2038	2020 552 94427	100pF 5% 50V
2045	2020 552 94427	100pF 5% 50V
2046	4822 124 23052	100uF 20% 16V
2047	4822 124 81286	47uF 20% 16V
2048	2022 020 00734	1uF 20% 50V
2056	2022 020 00734	1uF 20% 50V
2058	4822 124 22651	1uF 20% 50V
2061	2020 552 94427	100pF 5% 50V
2062	2020 552 94427	100pF 5% 50V
2070	2238 586 59812	100nF +80/-20% 50V
2080	2022 020 00734	1uF 20% 50V
2081	2022 020 00734	1uF 20% 50V
2300	4822 124 12255	10uF 20% 50V
2301	4822 126 13193	4,7nF 10% 63V
2302	4822 126 13193	4,7nF 10% 63V
2303	4822 126 13193	4,7nF 10% 63V
2304	4822 126 13193	4,7nF 10% 63V
2305	3198 028 44790	47uF 20% 35V
2306	3198 028 44790	47uF 20% 35V
2307	4822 126 13193	4,7nF 10% 63V
2308	4822 126 13193	4,7nF 10% 63V
2309	4822 124 22651	1uF 20% 50V
2310	4822 124 22651	1uF 20% 50V
2311	4822 124 40207	100uF 20% 25V
2312	4822 124 40207	100uF 20% 25V
2313	4822 124 40207	100uF 20% 25V
2314	4822 124 40207	100uF 20% 25V
2315	4822 126 13193	4,7nF 10% 63V
2316	4822 126 13193	4,7nF 10% 63V
2317	2020 561 90365	100nF +80/-20% 50V
2318	2020 561 90365	100nF +80/-20% 50V
2319	4822 121 43526	47nF 5% 250V
2320	4822 121 43526	47nF 5% 250V
2321	4822 121 43526	47nF 5% 250V
2322	4822 121 43526	47nF 5% 250V
2324	4822 126 11785	47pF 5% 50V
2333	4822 124 40433	47uF 20% 25V
2334	4822 124 12255	10uF 20% 50V
2335	4822 124 12255	10uF 20% 50V
2336	4822 124 12255	10uF 20% 50V
2339	2238 586 59812	100nF +80/-20% 50V
2341	4822 124 40255	100uF 20% 63V
2341	2020 012 93664	100uF 20% 50V
2501	4822 126 13881	470pF 5% 50V
2502	4822 126 13881	470pF 5% 50V
2503	4822 126 13881	470pF 5% 50V
2504	4822 126 13881	470pF 5% 50V
2505	4822 126 13881	470pF 5% 50V
2506	4822 126 13881	470pF 5% 50V
2507	4822 126 13881	470pF 5% 50V
2508	4822 126 13881	470pF 5% 50V
2509	4822 126 13193	4,7nF 10% 63V
2510	4822 126 13193	4,7nF 10% 63V
2511	5322 124 41948	470nF 20% 50V
2512	5322 124 41948	470nF 20% 50V
2513	4822 121 42408	220nF 5% 63V
2514	4822 121 42408	220nF 5% 63V
2515	4822 121 51252	470nF 5% 63V
2516	4822 121 51252	470nF 5% 63V
2517	4822 121 51252	470nF 5% 63V
2518	4822 121 51252	470nF 5% 63V
2521	5322 126 11579	3,3nF 10% 63V
2522	5322 126 11579	3,3nF 10% 63V
2523	4822 126 14549	33nF 16V
2524	4822 126 14549	33nF 16V
2525	3198 016 31020	1nF 25V
2530	3198 016 31020	1nF 25V
2544	2020 552 94427	100pF 5% 50V
2545	2020 552 94427	100pF 5% 50V
2546	4822 126 14585	100nF 10% 50V
2547	4822 124 81286	47uF 20% 16V
2549	2238 586 59812	100nF +80/-20% 50V
2550	4822 124 40433	47uF 20% 25V
2551	4822 124 81151	22uF 50V
2552	2238 916 15641	22nF 10% 25V
2560	5322 124 41948	470nF 20% 50V
2563	2238 586 59812	100nF +80/-20% 50V
2700	2020 552 94427	100pF 5% 50V
2701	5322 121 42661	330nF 5% 63V
2702	4822 126 13881	470pF 5% 50V

ELECTRICAL PARTS LIST - COMBI BOARD

CAPACITORS

2706	2020 552 94427	100pF 5% 50V
2707	2020 552 94427	100pF 5% 50V
2708	5322 121 42661	330nF 5% 63V
2709	4822 126 13881	470pF 5% 50V
2713	2020 552 94427	100pF 5% 50V
2714	4822 124 81286	47uF 20% 16V
2715	3198 017 42230	22nF 50V
2716	4822 124 23052	100uF 20% 16V

RESISTORS

3011	4822 051 20471	470R 5% 0,1W
3012	4822 051 20471	470R 5% 0,1W
3014	4822 051 30103	10k 5% 0,062W
3015	4822 117 12925	47k 1% 0,063W
3016	4822 051 30333	33k 5% 0,062W
3017	4822 051 30393	39k 5% 0,062W
3018	4822 051 30393	39k 5% 0,062W
3021	4822 051 30152	1k5 5% 0,062W
3022	4822 051 30103	10k 5% 0,062W
3024	4822 051 30153	15k 5% 0,062W
3026	4822 051 30152	1k5 5% 0,062W
3027	4822 051 30103	10k 5% 0,062W
3028	4822 051 30472	4k7 5% 0,062W
3029	4822 051 30153	15k 5% 0,062W
3031	4822 051 30103	10k 5% 0,062W
3032	2120 108 91909	RST SM 0603 ERJ3G 39R 5%
3033	2120 108 91909	RST SM 0603 ERJ3G 39R 5%
3034	4822 051 30103	10k 5% 0,062W
3035	4822 051 30103	10k 5% 0,062W
3041	4822 051 30273	27k 5% 0,062W
3042	4822 051 30102	1k 5% 0,062W
3043	4822 051 30152	1k5 5% 0,062W
3046	4822 116 80176	1R 5% 0,5W
3048	4822 051 30562	5k6 5% 0,063W
3050	4822 051 30273	27k 5% 0,062W
3052	4822 051 30152	1k5 5% 0,062W
3053	4822 051 30102	1k 5% 0,062W
3057	4822 051 30102	1k 5% 0,062W
3059	4822 051 30222	2k2 5% 0,062W
3062	4822 051 30103	10k 5% 0,062W
3065	2120 108 91909	RST SM 0603 ERJ3G 39R 5%
3066	2120 108 91909	RST SM 0603 ERJ3G 39R 5%
3067	4822 116 52289	5k6 5% 0,5W
3071	4822 051 30103	10k 5% 0,062W
3079	4822 051 30472	4k7 5% 0,062W
3094	4822 051 30471	470R 5% 0,062W
3095	4822 051 30471	470R 5% 0,062W
3107	4822 051 30271	270R 5% 0,062W
3300	4822 116 52276	3k9 5% 0,5W
3301	4822 051 30221	220R 5% 0,062W
3302	4822 051 30221	220R 5% 0,062W
3303	4822 051 30331	330R 5% 0,062W
3304	4822 051 30331	330R 5% 0,062W
3305	4822 051 30471	470R 5% 0,062W
3306	4822 051 30471	470R 5% 0,062W
3307	4822 051 30471	470R 5% 0,062W
3308	4822 051 30471	470R 5% 0,062W
3309	4822 050 24708	4R7 1% 0,6W
3310	4822 050 24708	4R7 1% 0,6W
3311	4822 050 24708	4R7 1% 0,6W
3312	4822 050 24708	4R7 1% 0,6W
3314	4822 051 30222	2k2 5% 0,062W
3315	4822 116 52219	330R 5% 0,5W
3318	4822 051 30332	3k3 5% 0,062W
3323	4822 117 12925	47k 1% 0,063W
3326	4822 051 30472	4k7 5% 0,062W
3327	4822 051 30472	4k7 5% 0,062W
3328	4822 051 30472	4k7 5% 0,062W
3329	4822 051 30332	3k3 5% 0,062W
3331	4822 051 30331	330R 5% 0,062W
3336	4822 051 30562	5k6 5% 0,063W
3337	4822 051 30562	5k6 5% 0,063W
3340	4822 116 52219	330R 5% 0,5W
3341	4822 051 30472	4k7 5% 0,062W
3342	4822 051 30103	10k 5% 0,062W
3353	4822 116 52249	1k8 5% 0,5W
3359	4822 117 13632	100k 1% 0,62W
3360	4822 051 30153	15k 5% 0,062W
3361	4822 051 30102	1k 5% 0,062W
3362	4822 051 30682	6k8 5% 0,062W
3363	4822 051 30102	1k 5% 0,062W
3372	4822 117 12903	1k8 1% 0,063W
3373	4822 117 12903	1k8 1% 0,063W
3377	4822 117 12925	47k 1% 0,063W
3378	4822 051 30102	1k 5% 0,062W
3379	4822 051 30222	2k2 5% 0,062W
3380	4822 051 30222	2k2 5% 0,062W
3503	4822 051 30153	15k 5% 0,062W
3505	4822 051 30102	1k 5% 0,062W
3506	4822 051 30102	1k 5% 0,062W
3507	5322 117 13056	8k2 1% 0,063W
3508	5322 117 13056	8k2 1% 0,063W
3509	4822 051 30562	5k6 5% 0,063W
3510	4822 051 30562	5k6 5% 0,063W
3511	4822 051 30123	12k 5% 0,062W
3512	4822 051 30123	12k 5% 0,062W
3513	4822 051 30562	5k6 5% 0,063W
3516	4822 051 30562	5k6 5% 0,063W
3540	4822 051 30471	470R 5% 0,062W
3541	4822 051 30471	470R 5% 0,062W
3543	4822 117 12903	1k8 1% 0,063W
3544	4822 051 30103	10k 5% 0,062W
3565	4822 051 30153	15k 5% 0,062W
3700	4822 051 30273	27k 5% 0,062W

ELECTRICAL PARTS LIST - COMBI BOARD

3701	4822 051 30471	470R 5% 0,062W
3704	4822 051 30682	6k8 5% 0,062W
3705	4822 051 30273	27k 5% 0,062W
3706	4822 051 30682	6k8 5% 0,062W
3707	4822 051 30273	27k 5% 0,062W
3709	4822 051 30471	470R 5% 0,062W
3711	4822 051 30273	27k 5% 0,062W
3712	4822 051 30472	4k7 5% 0,062W
3713	4822 052 10109 △	10R 5% 0,33W
3714	4822 051 30472	4k7 5% 0,062W
3715	4822 051 30103	10k 5% 0,062W
4201	4822 051 30008	0R Jumper 0603
4202	4822 051 30008	0R Jumper 0603
4203	4822 051 30008	0R Jumper 0603
4204	4822 051 30008	0R Jumper 0603
4205	4822 051 30008	0R Jumper 0603
4206	4822 051 30008	0R Jumper 0603
4207	4822 051 30008	0R Jumper 0603
4208	4822 051 30008	0R Jumper 0603
4209	4822 051 30008	0R Jumper 0603
4210	4822 051 30008	0R Jumper 0603
4211	4822 051 30008	0R Jumper 0603
4212	4822 051 30008	0R Jumper 0603
4214	4822 051 30008	0R Jumper 0603
4215	4822 051 30008	0R Jumper 0603
4216	4822 051 30008	0R Jumper 0603
4217	4822 051 30008	0R Jumper 0603
4219	4822 051 30008	0R Jumper 0603
4220	4822 051 30008	0R Jumper 0603
4221	4822 051 30008	0R Jumper 0603
4222	4822 051 30008	0R Jumper 0603
4223	4822 051 30008	0R Jumper 0603
4224	4822 051 30008	0R Jumper 0603
4225	4822 051 30008	0R Jumper 0603
4226	4822 051 30008	0R Jumper 0603
4227	4822 051 30008	0R Jumper 0603
4228	4822 051 30008	0R Jumper 0603
4229	4822 051 30008	0R Jumper 0603
4230	4822 051 30008	0R Jumper 0603
4231	4822 051 30008	0R Jumper 0603
4232	4822 051 30008	0R Jumper 0603
4233	4822 051 30008	0R Jumper 0603
4234	4822 051 30008	0R Jumper 0603
4235	4822 051 30008	0R Jumper 0603
4503	4822 051 30008	0R Jumper 0603
4504	4822 051 30008	0R Jumper 0603

COILS & FILTERS

5005	2422 549 44608	INDFXD 0603 EMI 100MHz 1k
5006	2422 549 44608	INDFXD 0603 EMI 100MHz 1k
5262	2238 586 59812	100nF +80/-20% 50V
5300	2422 536 00614	Coil 18,5T 0.5-2UEW 5,6D B
5301	2422 536 00614	Coil 18,5T 0.5-2UEW 5,6D B
5302	2422 536 00614	Coil 18,5T 0.5-2UEW 5,6D B
5303	2422 536 00614	Coil 18,5T 0.5-2UEW 5,6D B
5700	4822 157 62552	Coil 2,2uH 5%

DIODES

6002	4822 130 30621	1N4148
6005	4822 130 61219	BZX79-C10
6301	4822 130 31878	1N4003G
6302	4822 130 31878	1N4003G
6303	4822 130 31878	1N4003G
6304	9322 163 82682	DIO REC BYV98-200
6306	4822 130 30621	1N4148
6307	3198 010 53980	DIO REG BZX79-B3V9
6308	5322 130 31938	BYV27-200
6315	4822 130 34398	BZX79-B24
6323	4822 130 30621	1N4148
6324	4822 130 34278	BZX79-C6V8
6325	4822 130 31878	1N4003G
6326	4822 130 30621	1N4148
6327	4822 130 30621	1N4148
6330	4822 130 30621	1N4148
6331	4822 130 30621	1N4148
6332	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7000	4822 130 60373	BC857B
7004	4822 130 42804	BC817-25
7005	4822 209 17345	IC SM M62320FP
7006	5322 130 60845	BC807-25
7009	4822 130 42804	BC817-25
7010	5322 130 60159	BC847B
7013	4822 130 60373	BC857B
7300	5322 130 60159	BC847B
7301	9322 153 02682	IC AN7591
7302	9322 153 02682	IC AN7591
7304	4822 130 11578	FET POW STP16NE06
7307	4822 130 60373	BC857B
7308	5322 130 60159	BC847B
7309	4822 130 11336	FET POW STP16NE06FP
7310	4822 130 60373	BC856B
7313	4822 130 60373	BC857B
7325	5322 130 60159	BC847B
7328	4822 130 42804	BC817-25
7329	4822 130 42804	BC817-25
7505	5322 130 60159	BC847B
7506	9322 150 74668	IC SM TDA7468D
7700	4822 209 31378	IC SM NJM4556AM

Note : Only the parts mentioned in this list are normal service spare parts.

COMBI & REGULATOR BOARDS

From production week 444 onwards

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Brief introduction of the Regulator Board

The regulator board provides the following:
a) 12V supply: +12V_A and +12V_M derived from the +A supply
b) 5,6V and 5V supply: +5V6 and 5V_VCD derived from the +A/2 supply

Brief introduction of the Combi Board

1. Source selection & Sound control
   Audio Processor IC 7550 (TDA7468D) provides the source selection and sound control features via the I2C bus (I2C_CLK and I2C_DATA lines).

2. Line out
   Line out is taken directly from the Audio Processor IC 7550. Muting is done via Transistors 7500, 7501 and 7508.

3. Pre-amplifier
   IC7510 (NJM4556AM) provides pre-amplification of the output signals from the Audio Processor IC 7550. Muting of audio signals to Power Amplifier IC 7200 during Headphone application and Source switching is done via transistors 7514, 7515, 7540 and 7541

4. Headphone and Sub-woofer outputs
   The headphone and Sub-woofer output is taken from the pre-amplifier out. Muting of these outputs are done via transistors 7511, 7512, 7522 and 7523.

5. Power Amplifier
   IC 7200 (AN7125) is used as Power amplifier. It function as Class G amplifier together with transistor 7204 (BDW94C) which switches the supply between supply source +A and +A/2.

6. Protection Circuit
   Transistors 7201, 7202 and 7203 provides protection against:
   - short-circuit of speaker terminals
   - short-circuit of speaker terminals to ground

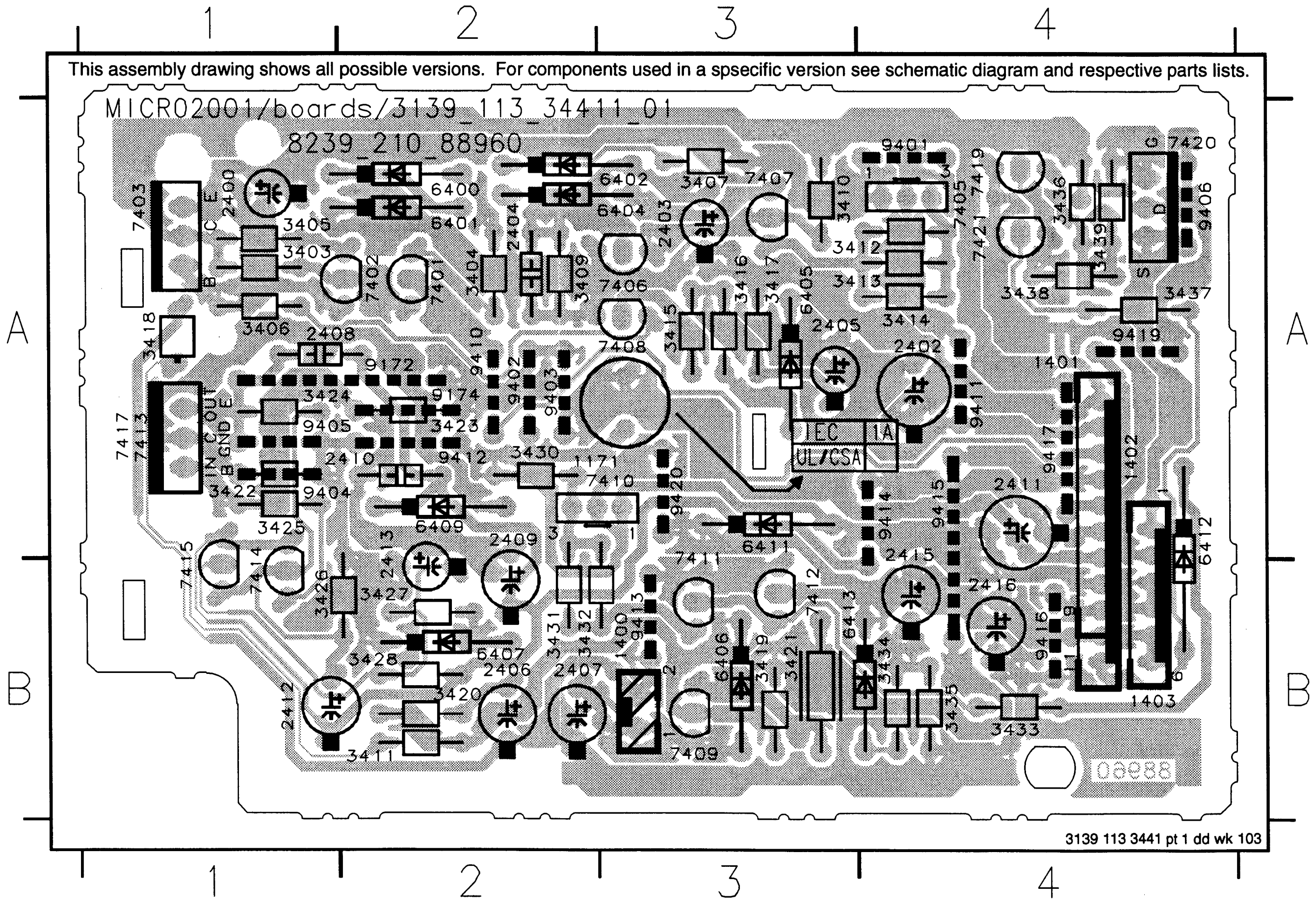
7. Digital out buffer
   IC 7525 (74VUD40) act as buffer to boost the digital output level

8. I/O Expander
   I/O Expander IC 7526 (M62320FP) converts the I2C bus (I2C_CLK and I2C_DATA lines) into additional control lines.

9. +5V6_CON supply
   IC 7529 (MC78L05) provides the necessary supply to power µProcessor IC 7102 (TMP88CU74F) during ECO Power mode.

COMPONENT SIDE VIEW - REGULATOR BOARD

1171	A2	2408	A1	3407	A3	3420	B2	3433	B4	6406	B3	7408	A3	9172	A2	9414	A4
1400	B3	2409	A2	3409	A2	3421	B3	3434	B4	6407	B2	7409	B3	9174	A2	9415	A4
1401	A4	2410	A2	3410	A3	3422	A1	3435	B4	6409	A2	7410	A3	9401	A4	9416	B4
1402	A4	2411	A4	3411	B2	3423	A2	3436	A4	6411	A3	7411	A3	9402	A2	9417	A4
1403	B4	2412	B1	3412	A3	3424	A1	3437	A4	6412	A4	7412	B3	9403	A2	9419	A4
2400	A1	2413	A2	3413	A3	3425	A1	3438	A4	6413	B3	7413	A1	9404	A1	9420	A3
2402	A4	2415	A4	3414	A4	3426	B1	3439	A4	7401	A2	7414	B1	9405	A1		
2403	A3	2416	B4	3415	A3	3427	B2	6400	A2	7402	A2	7415	B1	9406	A4		
2404	A2	3403	A1	3416	A3	3428	B2	6401	A2	7403	A1	7417	A1	9410	A2		
2405	A3	3404	A2	3417	A3	3430	A2	6402	A3	7405	A4	7419	A4	9411	A4		
2406	B2	3405	A1	3418	A1	3431	B2	6404	A3	7406	A3	7420	A4	9412	A2		
2407	B2	3406	A1	3419	B3	3432	B2	6405	A3	7407	A3	7421	A4	9413	B3		

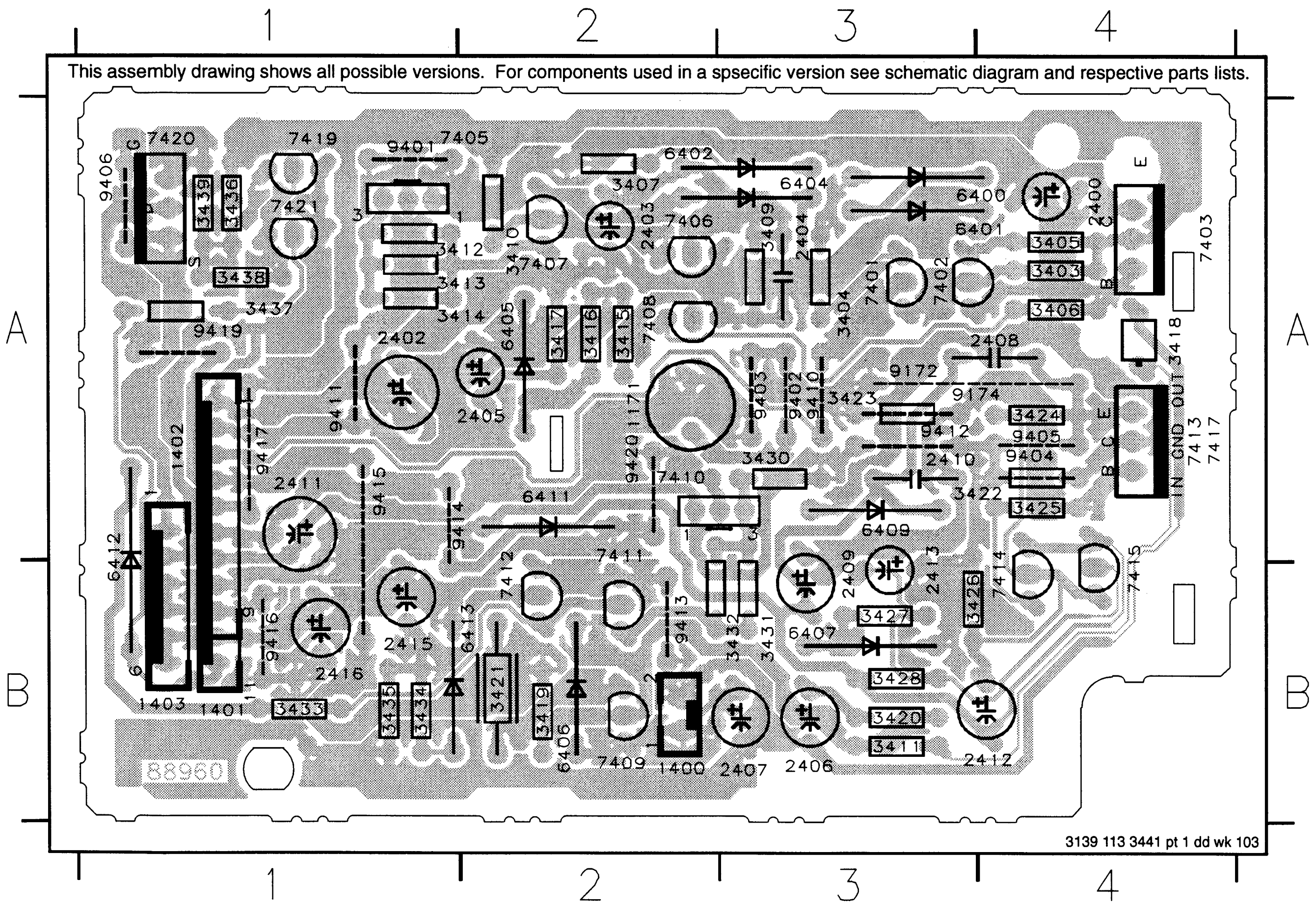


This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

3139 113 3441 pt 1 dd wk 103

COPPER SIDE VIEW - REGULATOR BOARD

1171	A2	2408	A4	3407	A2	3420	B3	3433	B1	6406	B2	7408	A2	9172	A3	9414	A1
1400	B2	2409	B3	3409	A3	3421	B2	3434	B1	6407	B3	7409	B2	9174	A3	9415	A1
1401	B1	2410	A3	3410	A2	3422	A4	3435	B1	6409	A3	7410	A2	9401	A1	9416	B1
1402	A1	2411	A1	3411	B3	3423	A3	3436	A1	6411	A2	7411	A2	9402	A3	9417	A1
1403	B1	2412	B4	3412	A2	3424	A4	3437	A1	6412	A1	7412	B2	9403	A3	9419	A1
2400	A4	2413	B3	3413	A2	3425	A4	3438	A1	6413	B2	7413	A4	9404	A4	9420	A2
2402	A1	2415	B1	3414	A2	3426	B3	3439	A1	7401	A3	7414	B4	9405	A4		
2403	A2	2416	B1	3415	A2	3427	B3	6400	A4	7402	A3	7415	B4	9406	A1		
2404	A3	3403	A4	3416	A2	3428	B3	6401	A4	7403	A4	7417	A4	9410	A3		
2405	A2	3404	A3	3417	A2	3430	A3	6402	A2	7405	A2	7419	A1	9411	A1		
2406	B3	3405	A4	3418	A4	3431	B3	6404	A3	7406	A2	7420	A1	9412	A3		
2407	B3	3406	A4	3419	B2	3432	B3	6405	A2	7407	A2	7421	A1	9413	B2		

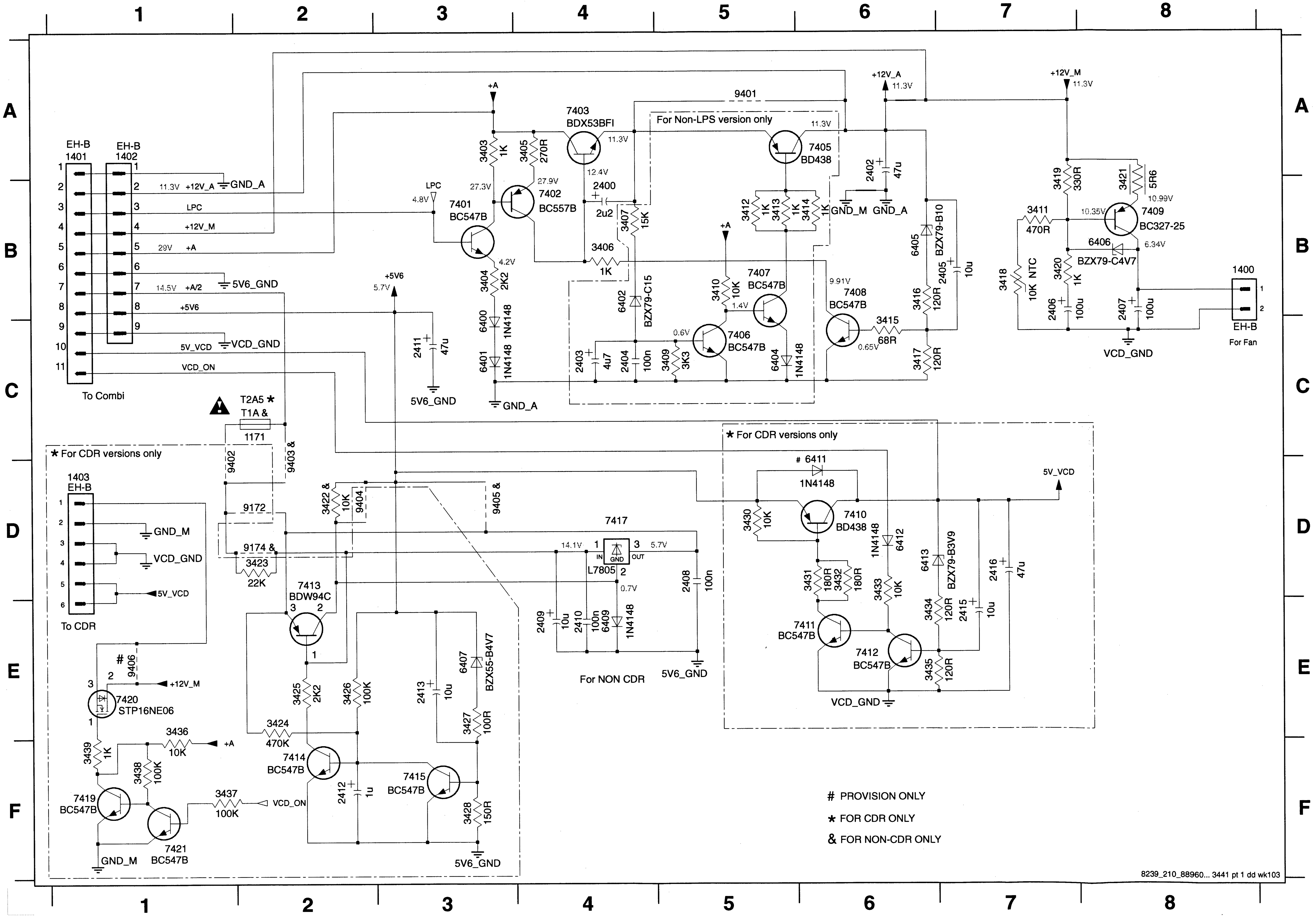


This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

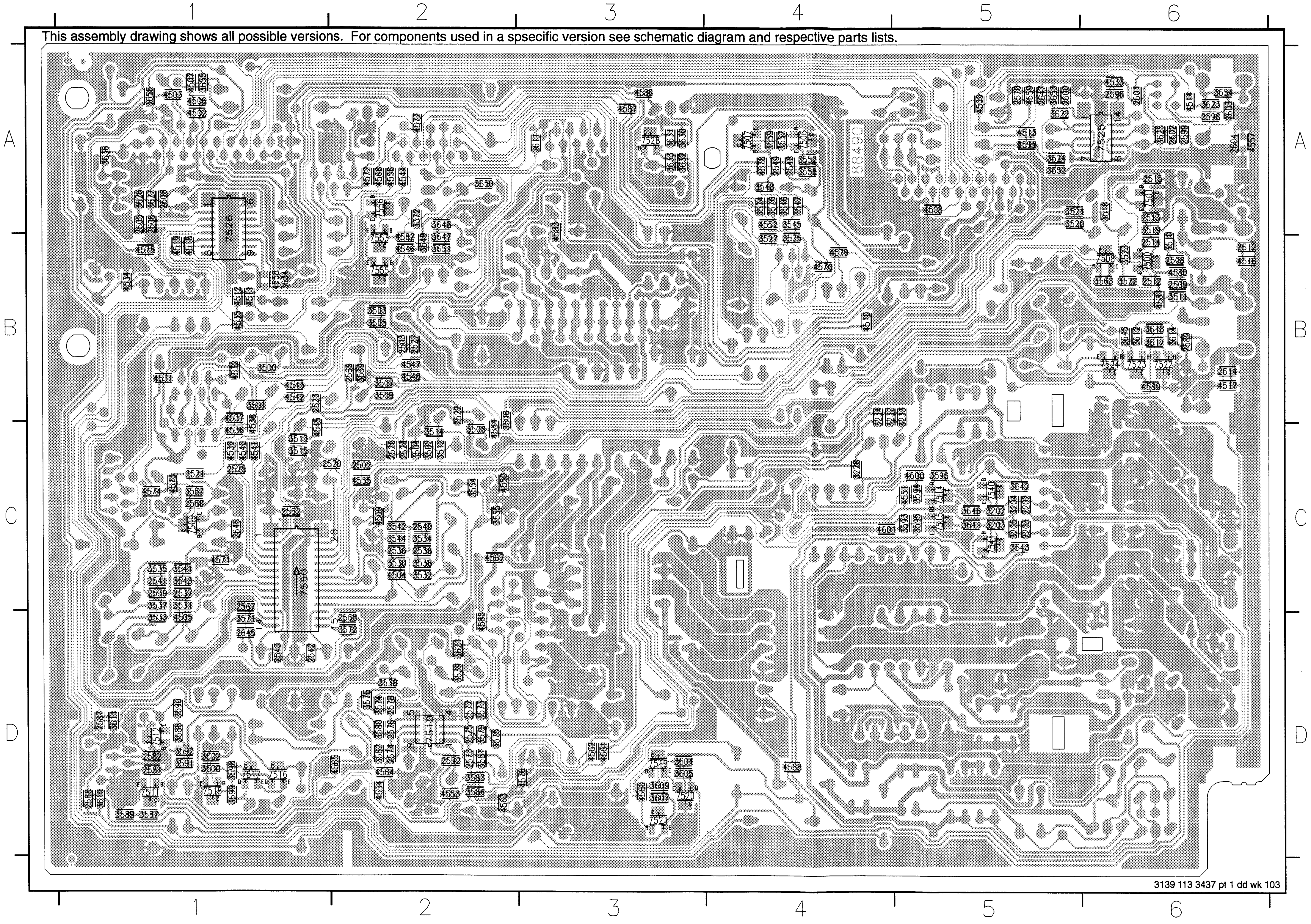
3139 113 3441 pt 1 dd wk 103

CIRCUIT DIAGRAM - REGULATOR BOARD

1171	C2
1400	B8
1401	A1
1402	A1
1403	D1
2400	B4
2402	A6
2403	C4
2404	C4
2405	B7
2406	B7
2407	B8
2408	D5
2409	E4
2410	E4
2411	C3
2412	F2
2413	E3
2415	E7
2416	D7
3403	A3
3404	B3
3405	A4
3406	B4
3407	B4
3409	C5
3410	B5
3411	B7
3412	B5
3413	B5
3414	B6
3415	C6
3416	B6
3417	C6
3418	B7
3419	B7
3420	B7
3421	B8
3422	D2
3423	D2
3424	E2
3425	E2
3426	E2
3427	E3
3428	F3
3430	D5
3431	D6
3432	D6
3433	D6
3434	E6
3435	E6
3436	E1
3437	F1
3438	F1
3439	F1
6400	C3
6401	C3
6402	B4
6404	C5
6405	B6
6406	B8
6407	E3
6409	E4
6411	D6
6412	D6
6413	D6
7401	B3
7402	B4
7403	A4
7405	A6
7406	C5
7407	B5
7408	B6
7409	B8
7410	D6
7411	E6
7412	E6
7413	D2
7414	F2
7415	F3
7417	D4
7419	F1
7420	E1
7421	F1
9172	D2
9174	D2
9401	A5
9402	D1
9403	D2
9404	D2
9405	D3
9406	E1


1
2
3
4
5
6
7
8
A
B
C
D
E
F
EH-B
1401
EH-B
1402
11.3V +12V_A
GND_A
LPC
+12V_M
29V +A
14.5V +A/2
5V6_GND
+5V6
5V_VCD
VCD_GND
VCD_ON
To Combi
+A
3403 1K
3405 270R
27.3V
27.9V
LPC
4.8V
7401
BC547B
7402
BC557B
4.2V
3404 2K2
6400 1N4148
6401 1N4148
GND_A
+5V6
5.7V
2411 47u
5V6_GND
7403
BDX53BFI
11.3V
12.4V
2400
2u2
3407 15K
3406
1K
6402 BZX79-C15
9401
For Non-LPS version only
11.3V
7405
BD438
+12V_A
11.3V
2402 47u
3412 1K
3413 1K
3414 1K
GND_M
GND_A
+A
3410 10K
7407
BC547B
1.4V
0.6V
7406
BC547B
2403 4u7
2404 100n
3409 3K3
6404 1N4148
9.91V
7408
BC547B
0.65V
3415
68R
6405 BZX79-B10
2405 10u
3416 120R
3417 120R
+12V_M
11.3V
3419 330R
3421 5R6
10.99V
3411
470R
10.35V
7409
BC327-25
6406
BZX79-C4V7
6.34V
3418 10K NTC
3420 1K
2406 100u
2407 100u
VCD_GND
1400
EH-B
For Fan
T2A5 ★
T1A &
1171
9402
9403 &
★ For CDR versions only
1403
EH-B
GND_M
VCD_GND
5V_VCD
To CDR
9172
9174 &
3423
22K
3422 & 10K
9404
9405 &
7413
BDW94C
#
9406
+12V_M
7420
STP16NE06
3436
10K
+A
3439 1K
3438 100K
7419
BC547B
7421
BC547B
GND_M
3437
100K
VCD_ON
3424
470K
3425 2K2
3426 100K
7414
BC547B
2412 1u
7415
BC547B
2413 10u
6407 BZX55-B4V7
3427 100R
3428 150R
5V6_GND
7417
14.1V
5.7V
IN
GND
OUT
L7805
0.7V
2409 10u
2410 100n
6409 1N4148
2408 100n
For NON CDR
5V6_GND
★ For CDR versions only
# 6411
1N4148
5V_VCD
3430 10K
7410
BD438
6412 1N4148
6413 BZX79-B3V9
2416 47u
3431 180R
3432 180R
3433 10K
3434 120R
2415 10u
7411
BC547B
7412
BC547B
3435 120R
VCD_GND
# PROVISION ONLY
★ FOR CDR ONLY
& FOR NON-CDR ONLY
8239_210_88960... 3441 pt 1 dd wk103

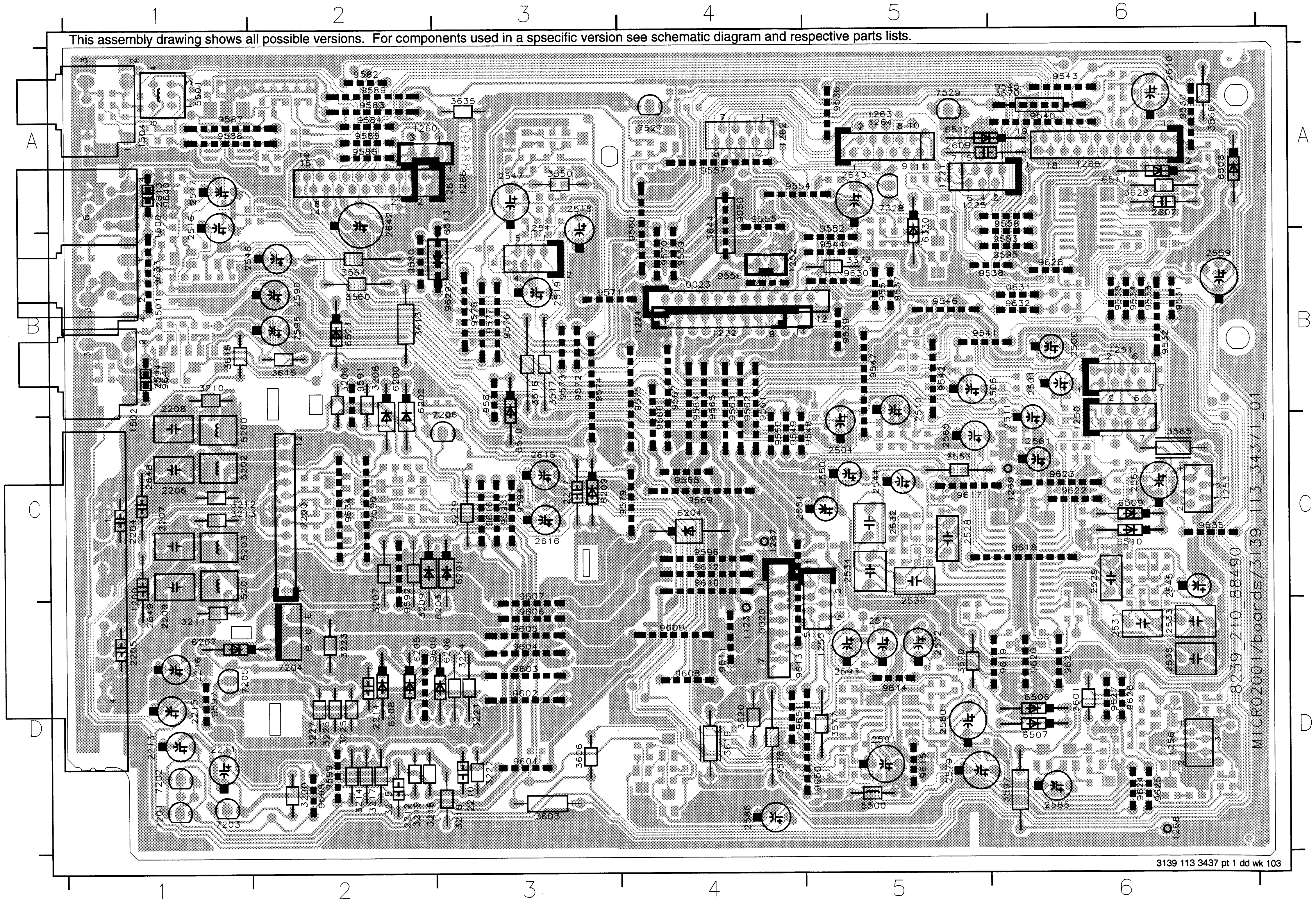
CHIP LAYOUT - COMBI BOARD



This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

2202	C5	3505	B2	3610	D1	4558	B1
2203	C5	3506	B2	3611	D1	4559	A5
2502	C2	3507	B2	3612	B6	4560	D3
2503	B2	3508	C2	3614	B6	4561	D3
2508	B6	3509	B2	3617	B6	4562	D3
2509	B6	3510	B6	3618	B6	4563	D2
2512	B6	3511	B6	3621	D2	4564	D2
2513	A6	3512	C2	3622	A5	4565	D2
2514	B6	3513	C1	3623	A6	4567	C2
2515	A6	3514	C2	3624	A5	4568	A2
2520	C2	3515	C1	3625	A6	4569	C2
2521	C1	3518	A6	3626	A1	4570	B4
2522	B2	3519	A6	3627	A1	4571	C1
2523	B1	3520	A5	3630	A3	4572	A2
2524	C2	3521	A5	3631	A3	4573	C1
2525	C1	3522	B6	3632	A3	4574	C1
2526	C2	3523	B6	3633	A3	4575	B1
2527	B2	3524	A4	3634	B1	4576	D3
2536	C2	3525	B4	3636	A1	4577	A2
2537	C1	3526	A4	3641	C5	4578	A4
2538	C2	3527	B4	3642	C5	4579	B4
2539	C1	3530	C2	3643	C5	4580	B6
2540	C2	3531	C1	3645	B6	4581	B6
2541	C1	3532	C2	3646	C5	4582	B2
2542	D1	3533	D1	3647	B2	4583	A3
2543	D1	3534	C2	3648	A2	4584	C2
2548	A4	3535	C1	3649	B2	4585	D2
2549	A4	3536	C2	3650	A2	4586	A3
2560	C1	3537	C1	3651	B2	4587	A3
2562	C1	3538	D2	3652	A5	4588	D4
2566	B2	3539	D2	3653	A5	4589	B6
2567	C1	3541	C1	3654	A6	4600	C5
2568	D2	3542	C2	3655	A1	4601	C4
2570	A5	3543	C1	3656	A1	7500	B6
2573	D2	3544	C2	4502	A1	7501	A6
2574	D2	3545	A4	4503	A1	7506	A4
2575	D2	3546	A4	4504	C2	7507	A4
2576	D2	3547	A4	4505	D1	7508	B6
2577	D2	3548	A4	4506	A1	7509	C1
2578	D2	3552	A4	4507	A1	7510	D2
2581	D1	3554	C2	4508	A5	7511	D1
2582	D1	3555	C2	4509	A5	7512	D1
2587	D1	3557	A4	4510	B4	7514	C5
2588	D1	3558	A4	4511	B1	7515	C5
2589	B6	3559	A4	4512	B1	7516	D1
2592	D2	3563	B6	4513	A5	7517	D1
2596	A6	3567	C1	4514	A6	7518	D1
2597	A5	3569	B2	4515	A5	7519	D3
2598	A6	3571	D1	4516	B6	7520	D3
2599	A6	3572	D2	4517	B6	7521	D3
2600	A5	3573	D2	4518	B1	7522	B6
2601	A6	3574	D2	4519	B1	7523	B6
2602	A6	3575	D2	4531	B1	7524	B6
2603	A6	3576	D2	4532	B1	7525	A6
2604	A6	3579	D2	4533	A6	7526	A1
2605	A1	3580	D2	4534	B1	7528	A3
2606	A1	3581	D2	4535	B1	7540	C5
2608	A1	3582	D2	4536	C1	7541	C5
2611	A3	3583	D2	4537	B1	7550	C1
2612	B6	3584	D2	4538	C1	7553	B2
2614	B6	3587	D1	4539	C1	7555	B2
2645	D1	3588	D1	4540	C1	7556	A2
2646	C1	3589	D1	4541	C1		
2647	A5	3590	D1	4542	B1		
3202	C5	3591	D1	4543	B1		
3203	C5	3592	D1	4544	A2		
3204	C5	3593	C5	4545	C1		
3205	C5	3594	C5	4546	B2		
3228	C4	3595	C5	4547	B2		
3232	B4	3596	C5	4548	B2		
3233	B5	3598	D1	4550	C2		
3234	B4	3599	D1	4551	C5		
3372	A2	3600	D1	4552	A4		
3500	B1	3602	D1	4553	D2		
3501	B1	3604	D3	4554	D2		
3502	C2	3605	D3	4555	C2		
3503	B2	3607	D3	4556	A2		
3504	C2	3609	D3	4557	A6		

COMPONENT LAYOUT - COMBI BOARD



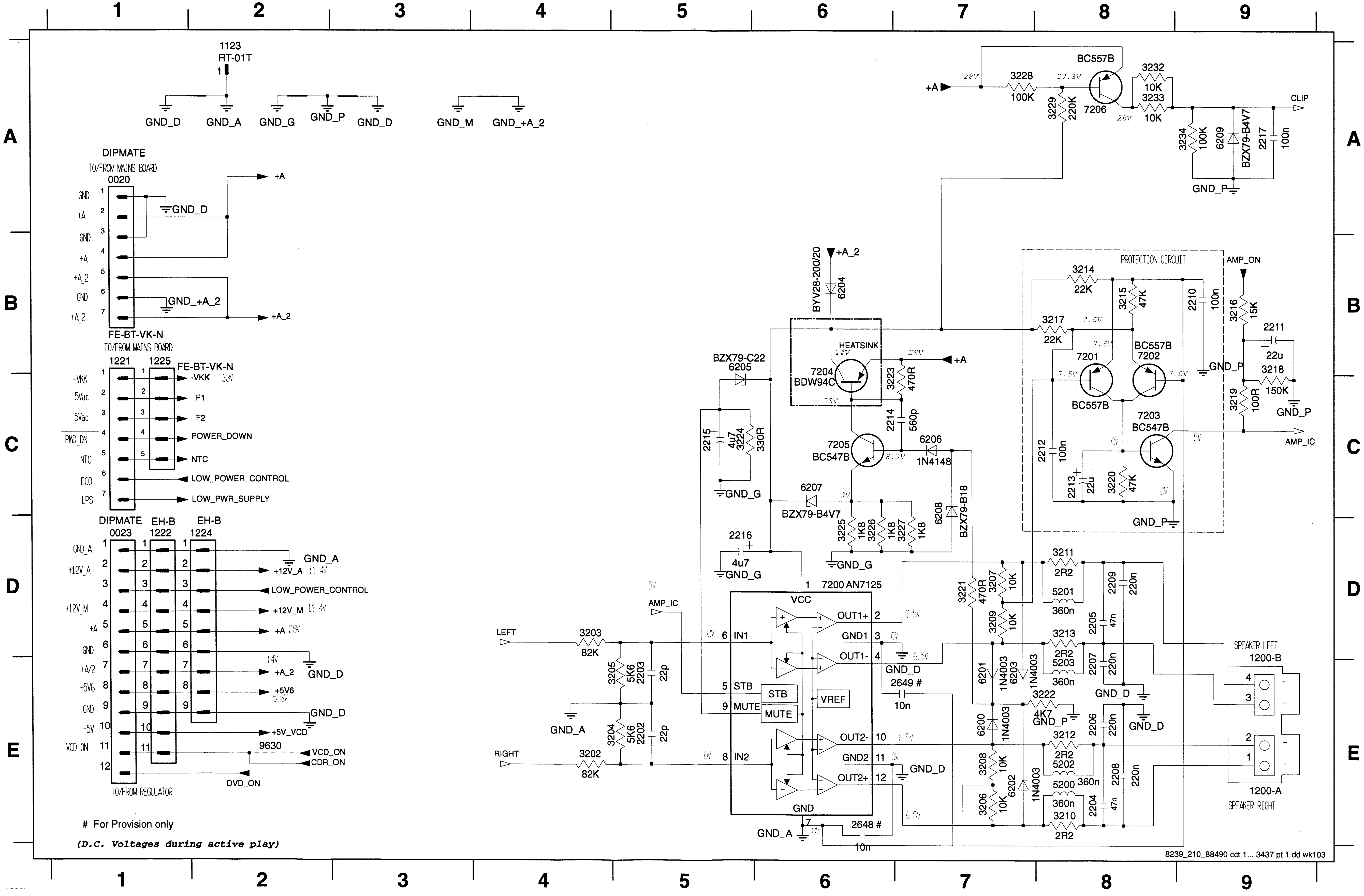
This assembly drawing shows all possible versions. For components used in a spsecific version see schematic diagram and respective parts lists.

3139 113 3437 pt 1 dd wk 103

0020	D4	2591	D5	6330	B5	9586	A2
0023	B4	2593	D5	6506	D6	9587	A1
1123	D4	2594	B1	6507	D6	9588	A1
1200	C1	2595	B2	6508	A6	9589	A2
1221	A5	2607	A6	6509	C6	9590	C2
1222	B4	2609	A5	6510	C6	9591	B2
1224	B4	2610	A6	6511	A6	9592	D2
1225	A5	2613	A1	6512	A5	9593	C3
1250	C6	2615	C3	6513	A3	9594	C3
1251	B6	2616	C3	6520	C3	9595	B6
1252	B4	2642	A2	6521	B2	9596	C4
1253	C6	2643	A5	7200	C2	9597	D1
1254	A3	2648	C1	7201	D1	9598	D2
1255	D5	2649	D1	7202	D1	9599	D2
1256	D6	3206	B2	7203	D1	9600	D2
1260	A2	3207	D2	7204	D2	9601	D3
1261	A3	3208	B2	7205	D1	9602	D3
1262	A4	3209	D2	7206	B3	9603	D3
1263	A5	3210	B1	7328	A5	9604	D3
1264	A5	3211	D1	7527	A4	9605	D3
1265	A6	3212	C1	7529	A5	9606	D3
1266	A3	3213	C1	9050	A4	9607	C3
1267	C4	3214	D2	9530	A6	9608	D4
1268	D6	3215	D2	9531	B6	9609	D4
1269	C6	3216	D3	9532	B6	9610	C4
1500	A1	3217	D2	9533	B6	9611	D4
1501	B1	3218	D2	9534	B6	9612	C4
1502	C1	3219	D2	9535	B6	9613	D4
1504	A1	3220	D2	9536	A5	9614	D5
2204	C1	3221	D3	9537	B5	9615	D5
2205	D1	3222	D3	9538	B6	9616	C3
2206	C1	3223	D2	9539	B5	9617	C5
2207	C1	3224	D3	9540	A6	9618	C6
2208	B1	3225	D2	9541	B5	9619	D6
2209	D1	3226	D2	9542	B5	9620	D6
2210	D3	3227	D2	9543	A6	9621	D6
2211	D1	3229	C3	9544	B5	9622	C6
2212	D2	3373	B5	9545	A6	9623	C6
2213	D1	3516	B3	9546	B5	9624	D6
2214	D2	3517	B3	9547	B5	9625	D6
2215	D1	3550	A3	9548	C5	9626	D6
2216	D1	3553	C5	9549	C4	9627	D6
2217	C3	3560	B2	9550	C4	9628	B6
2500	B6	3564	B2	9551	B5	9629	B3
2501	B6	3565	C6	9552	A5	9630	B5
2504	C5	3566	A6	9553	B6	9631	B6
2505	B6	3570	D5	9554	A4	9632	B6
2510	B5	3577	D5	9555	A4	9633	B1
2511	C6	3578	D4	9556	B4	9634	C2
2516	A1	3597	D6	9557	A4	9635	C6
2517	A1	3601	D6	9558	A6	9640	A1
2518	A3	3603	D3	9559	B4	9641	B1
2519	B3	3606	D3	9560	A4	9650	D5
2528	C5	3613	B2	9561	B4	9651	D4
2529	C6	3615	B2	9562	B4		
2530	D5	3616	B1	9563	B4		
2531	D6	3619	D4	9564	B4		
2532	C5	3620	D4	9565	B4		
2533	D6	3628	A6	9566	C4		
2534	C5	3635	A3	9567	B4		
2535	D6	3644	A4	9568	C4		
2544	C5	3670	A6	9569	C4		
2545	C6	5200	C1	9570	B4		
2546	B1	5201	C1	9571	B3		
2547	A3	5202	C1	9572	B3		
2550	C5	5203	C1	9573	B3		
2551	C4	5500	D5	9574	B3		
2559	B6	5501	A1	9575	B4		
2561	C6	6200	B2	9576	B3		
2563	C6	6201	C3	9577	B3		
2565	C5	6202	B2	9578	B3		
2571	D5	6203	D3	9579	C4		
2572	D5	6204	C4	9580	B2		
2579	D5	6205	D2	9581	B3		
2580	D5	6206	D3	9582	A2		
2585	D6	6207	D1	9583	A2		
2586	D4	6208	D2	9584	A2		
2590	B2	6209	C3	9585	A2		

COMBI CIRCUIT - POWER AMPLIFIER PART

0020 A1
0023 D1
1123 A2
1200-A E9
1200-B E9
1221 B1
1222 D1
1224 D1
1225 B1
2202 E5
2203 E5
2204 E8
2205 D8
2206 E8
2207 E8
2208 E8
2209 D8
2210 B9
2211 B9
2212 C8
2213 C8
2214 C6
2215 C5
2216 D5
2217 A9
2648 E6
2649 E7
3202 E4
3203 D4
3204 E4
3205 E5
3206 E7
3207 D7
3208 E7
3209 D7
3210 E8
3211 D8
3212 E8
3213 D8
3214 B8
3215 B8
3216 B9
3217 B8
3218 B9
3219 C9
3220 C8
3221 D7
3222 E8
3223 C7
3224 C5
3225 D6
3226 D6
3227 D7
3228 A7
3229 A8
3232 A8
3233 A8
3234 A9
5200 E8
5201 D8
5202 E8
5203 E8
6200 E7
6201 E7
6202 E7
6203 E7
6204 B6
6205 B5
6206 C7
6207 C6
6208 C7
6209 A9
7200 D6
7201 B8
7202 B8
7203 C8
7204 C6
7205 C6
7206 A8
9630 E2

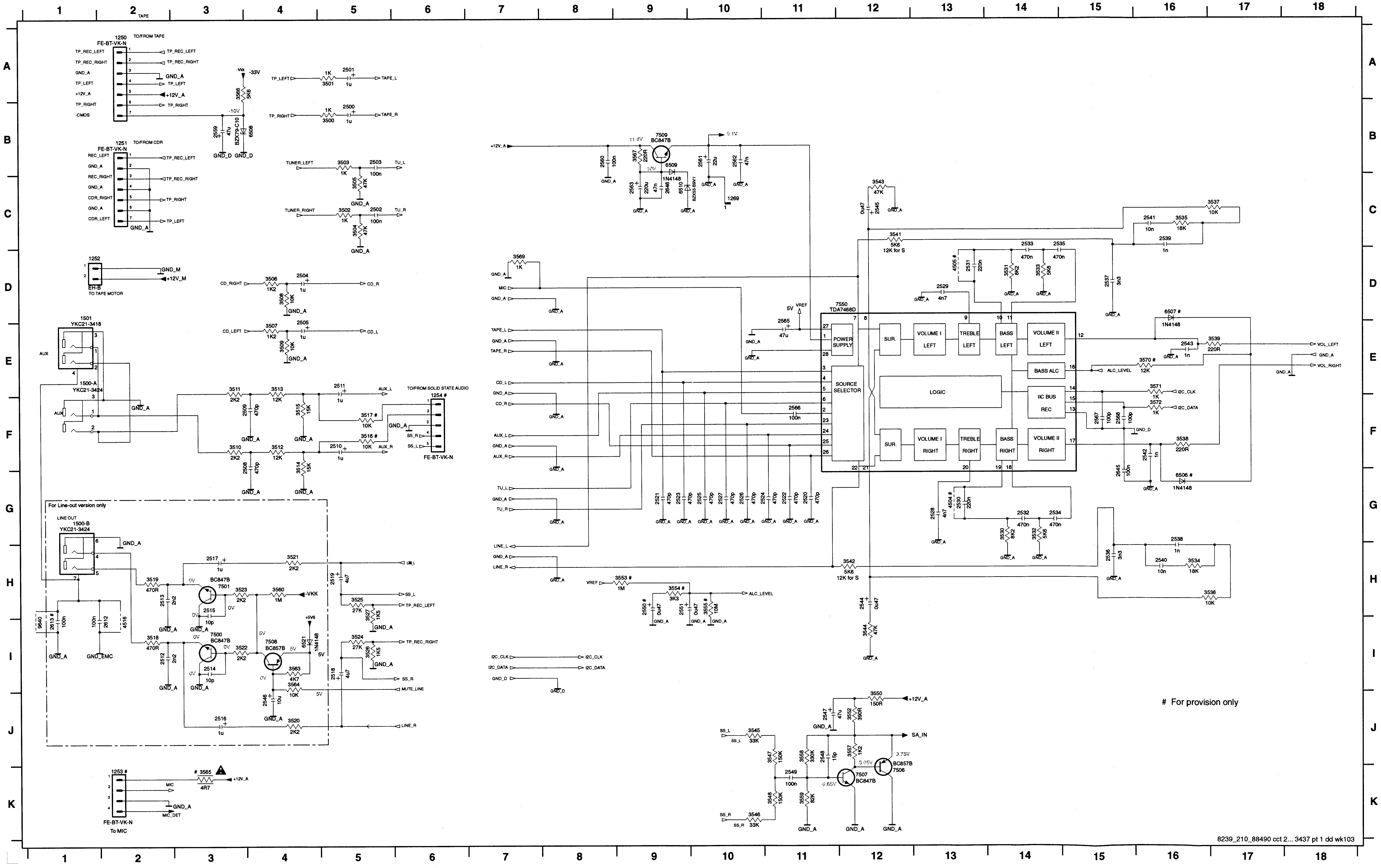

1
2
3
4
5
6
7
8
9
A
B
C
D
E
1123
RT-01T
GND_D
GND_A
GND_G
GND_P
GND_M
GND_+A_2
DIPMATE
TO/FROM MAINS BOARD
0020
+A
+A_2
FE-BT-VK-N
1221
1225
-VKK
5Vac
PWD_DN
NTC
ECO
LPS
F1
F2
POWER_DOWN
LOW_POWER_CONTROL
LOW_PWR_SUPPLY
DIPMATE
EH-B
0023
1222
1224
+12V_A
+12V_M
+5V6
+5V
VCD_ON
+5V_VCD
9630
CDR_ON
DVD_ON
TO/FROM REGULATOR
BC557B
3228
100K
3229
220K
7206
3232
10K
3233
10K
CLIP
3234
100K
6209
BZX79-B4V7
2217
100n
BYV28-200/20
6204
HEATSINK
7204
BDW94C
3223
470R
2214
560p
BZX79-C22
6205
2215
4u7
3224
330R
7205
BC547B
6206
1N4148
6207
BZX79-B4V7
3225
1K8
3226
1K8
3227
1K8
6208
BZX79-B18
2216
4u7
PROTECTION CIRCUIT
3214
22K
3215
47K
2210
100n
AMP_ON
3216
15K
3217
22K
7201
BC557B
7202
2211
22u
3218
150K
3219
100R
7203
BC547B
AMP_IC
2212
100n
2213
22u
3220
47K
7200 AN7125
VCC
OUT1+
GND1
OUT1-
STB
MUTE
VREF
IN1
IN2
OUT2-
GND2
OUT2+
GND
LEFT
RIGHT
3203
82K
3202
82K
3205
5K6
2203
22p
3204
5K6
2202
22p
2649 #
10n
2648 #
10n
3211
2R2
5201
360n
2209
220n
3221
470R
3207
10K
3209
10K
2205
47n
3213
2R2
5203
360n
2207
220n
6201
1N4003
6203
1N4003
3222
4K7
6200
1N4003
2206
220n
3212
2R2
5202
360n
3208
10K
6202
1N4003
2208
220n
5200
360n
3206
10K
2204
47n
3210
2R2
SPEAKER LEFT
1200-B
1200-A
SPEAKER RIGHT
8239_210_88490 cct 1... 3437 pt 1 dd wk103

For Provision only

(D.C. Voltages during active play)

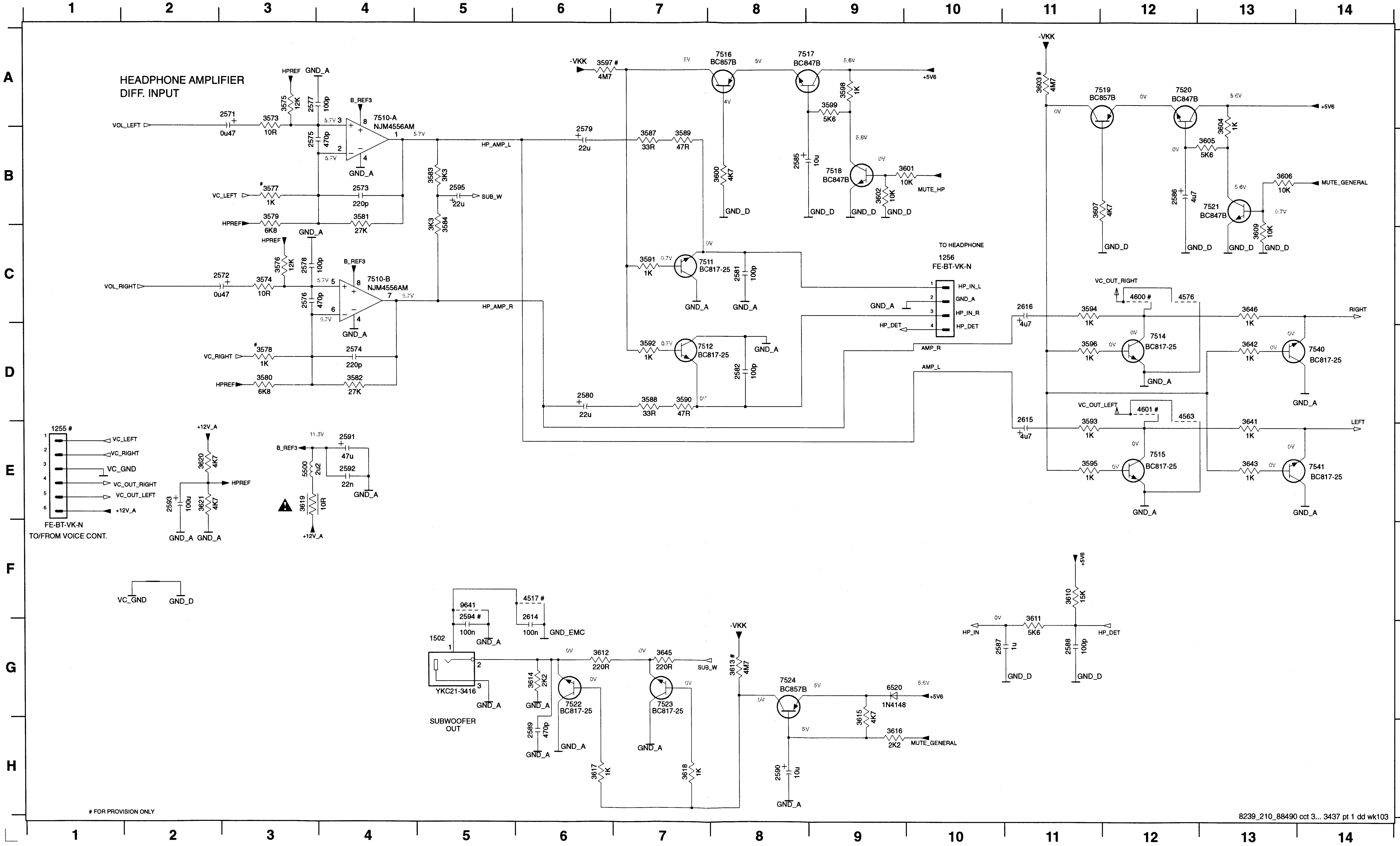
COMBI CIRCUIT - SOURCE SELECT & SOUND CONTROL PART

1250	A2
1251	B2
1252	D1
1253	K2
1254	F6
1269	C10
1500-A	E1
1500-B	G1
1501	D1
2500	B5
2501	A5
2502	C5
2503	B5
2504	D4
2505	E4
2508	F4
2509	F4
2510	F5
2511	E5
2512	I2
2513	H2
2514	I3
2515	H3
2516	J3
2517	H3
2518	I5
2519	H5
2520	G11
2521	G9
2522	G11
2523	G9
2524	G11
2525	G10
2526	G10
2527	G10
2528	G13
2529	D13
2530	G13
2531	D13
2532	G14
2533	C14
2534	G14
2535	C14
2536	H15
2537	D15
2538	G16
2539	C16
2540	H16
2541	C16
2542	F16
2543	E16
2544	H12
2545	C12
2546	J4
2547	J11
2548	J11
2549	K11
2550	H9
2551	H9
2559	B3
2560	B8
2561	B10
2562	B10
2563	C9
2565	E11
2566	F11
2567	F15
2568	F15
2612	I2
2613	I1
2645	G15
2646	C9
3500	B5
3501	A5
3502	C5
3503	B5
3504	C5
3505	C5
3506	D4
3507	E4
3508	D4
3509	E4
3510	F3
3511	E3
3512	F4
3513	E4
3514	F4
3515	F4
3516	F5
3517	F5
3518	I2
3519	H2
3520	J4
3521	H4
3522	I3
3523	H3
3524	I5
3525	H5
3526	I5
3527	H5
3530	G14
3531	D14
3532	G14
3533	D14
3534	H16
3535	C16
3536	H17
3537	C17
3538	F16
3539	E17
3541	C12
3542	H12
3543	C12
3544	I12
3545	J10
3546	K10
3547	J11
3548	K11
3550	J12
3552	J12
3553	H9
3554	H9
3555	H10
3557	J12
3558	J11
3559	K11
3560	H4
3563	I4
3564	I4
3565	K3
3566	A3
3567	B9
3569	D7
3570	E16
3571	E16
3572	F16
4504	G13
4505	D13
4516	I2
6506	G16
6507	D16
6508	B4
6509	B9
6510	C9
6521	I4
7500	I3
7501	H3
7506	K12
7507	K12
7508	I4
7509	B9
7550	D12
9640	I1


1250 TO/FROM TAPE FE-BT-VK-N
TP_REC_LEFT
TP_REC_RIGHT
GND_A
TP_LEFT
+12V_A
TP_RIGHT
-CMOS
1251 TO/FROM CDR FE-BT-VK-N
REC_LEFT
REC_RIGHT
CDR_RIGHT
CDR_LEFT
1252 EH-B TO TAPE MOTOR
GND_M
+12V_M
1501 YKC21-3418
AUX
1500-A YKC21-3424
For Line-out version only
LINE OUT
1500-B YKC21-3424
1254 # TO/FROM SOLID STATE AUDIO FE-BT-VK-N
AUX_L
AUX_R
SS_R
SS_L
TAPE_L
TAPE_R
TU_L
TU_R
CD_R
CD_L
TUNER_LEFT
TUNER_RIGHT
CD_RIGHT
CD_LEFT
BC847B 7501
BC847B 7500
BC857B 7508
1N4148 6521
-VKK
MUTE_LINE
LINE_L
LINE_R
TP_REC_LEFT
TP_REC_RIGHT
1253 # FE-BT-VK-N To MIC
MIC
MIC_DET
+12V_A
BZX79-C10 6508
BC847B 7509
1N4148 6509
BZX55-B9V1 6510
9.1V
7550 TDA7468D
POWER SUPPLY
SOURCE SELECTOR
SUR.
VOLUME I LEFT
TREBLE LEFT
BASS LEFT
VOLUME II LEFT
BASS ALC
LOGIC
IIC BUS REC
VOLUME I RIGHT
TREBLE RIGHT
BASS RIGHT
VOLUME II RIGHT
ALC_LEVEL
I2C_CLK
I2C_DATA
VOL_LEFT
VOL_RIGHT
GND_D
VREF
1N4148 6507 #
1N4148 6506 #
12K for S
SA_IN
BC847B 7507
BC857B 7506
# For provision only
8239_210_88490 cct 2... 3437 pt 1 dd wk103

COMBI CIRCUIT - HEADPHONE AMPLIFIER & SUB-WOOFER OUT PART

1255	E1
1256	C10
1502	G5
2571	A3
2572	C3
2573	B4
2574	D4
2575	B3
2576	C3
2577	A3
2578	C3
2579	B6
2580	D6
2581	C8
2582	D8
2585	B8
2586	B12
2587	G10
2588	G11
2589	H6
2590	H8
2591	E4
2592	E4
2593	E2
2594	G5
2595	B5
2614	G6
2615	D11
2616	C11
3573	A3
3574	C3
3575	A3
3576	C3
3577	B3
3578	D3
3579	B3
3580	D3
3581	B4
3582	D4
3583	B5
3584	B5
3587	B7
3588	D7
3589	B7
3590	D7
3591	C7
3592	D7
3593	E11
3594	C11
3595	E11
3596	D11
3597	A6
3598	A9
3599	A9
3600	B8
3601	B10
3602	B9
3603	A11
3604	A13
3605	B13
3606	B13
3607	B11
3609	C13
3610	F11
3611	G11
3612	G6
3613	G8
3614	G6
3615	G9
3616	H9
3617	H6
3618	H7
3619	E3
3620	E2
3621	E2
3641	E13
3642	D13
3643	E13
3645	G7
3646	C13
4517	F6
4563	D12
4576	C12
4600	C12
4601	D12
5500	E3
6520	G9
7510-A	A4
7510-B	C4
7511	C7
7512	D7
7514	D12
7515	E12
7516	A8
7517	A9
7518	B9
7519	A12
7520	A12
7521	B13
7522	G6
7523	G7
7524	G8
7540	D14
7541	E14
9641	F5


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G H
HEADPHONE AMPLIFIER
DIFF. INPUT
VOL_LEFT
VOL_RIGHT
VC_LEFT
VC_RIGHT
HPREF
GND_A
B_REF3
7510-A
NJM4556AM
7510-B
NJM4556AM
HP_AMP_L
HP_AMP_R
SUB_W
-VKK
3597 #
4M7
7516
BC857B
7517
BC847B
+5V6
7518
BC847B
MUTE_HP
GND_D
7511
BC817-25
7512
BC817-25
TO HEADPHONE
1256
FE-BT-VK-N
HP_IN_L
GND_A
HP_IN_R
HP_DET
AMP_R
AMP_L
7519
BC857B
7520
BC847B
7521
BC847B
MUTE_GENERAL
VC_OUT_RIGHT
VC_OUT_LEFT
4600 #
4576
4601 #
4563
7514
BC817-25
7515
BC817-25
7540
BC817-25
7541
BC817-25
RIGHT
LEFT
1255 #
VC_GND
+12V_A
FE-BT-VK-N
TO/FROM VOICE CONT.
5500
2u2
3619
10R
VC_GND
GND_D
9641
2594 #
4517 #
GND_EMC
1502
YKC21-3416
SUBWOOFER
OUT
7522
BC817-25
7523
BC817-25
3613 #
4M7
7524
BC857B
6520
1N4148
HP_IN
HP_DET
3611
5K6
3610
15K

FOR PROVISION ONLY

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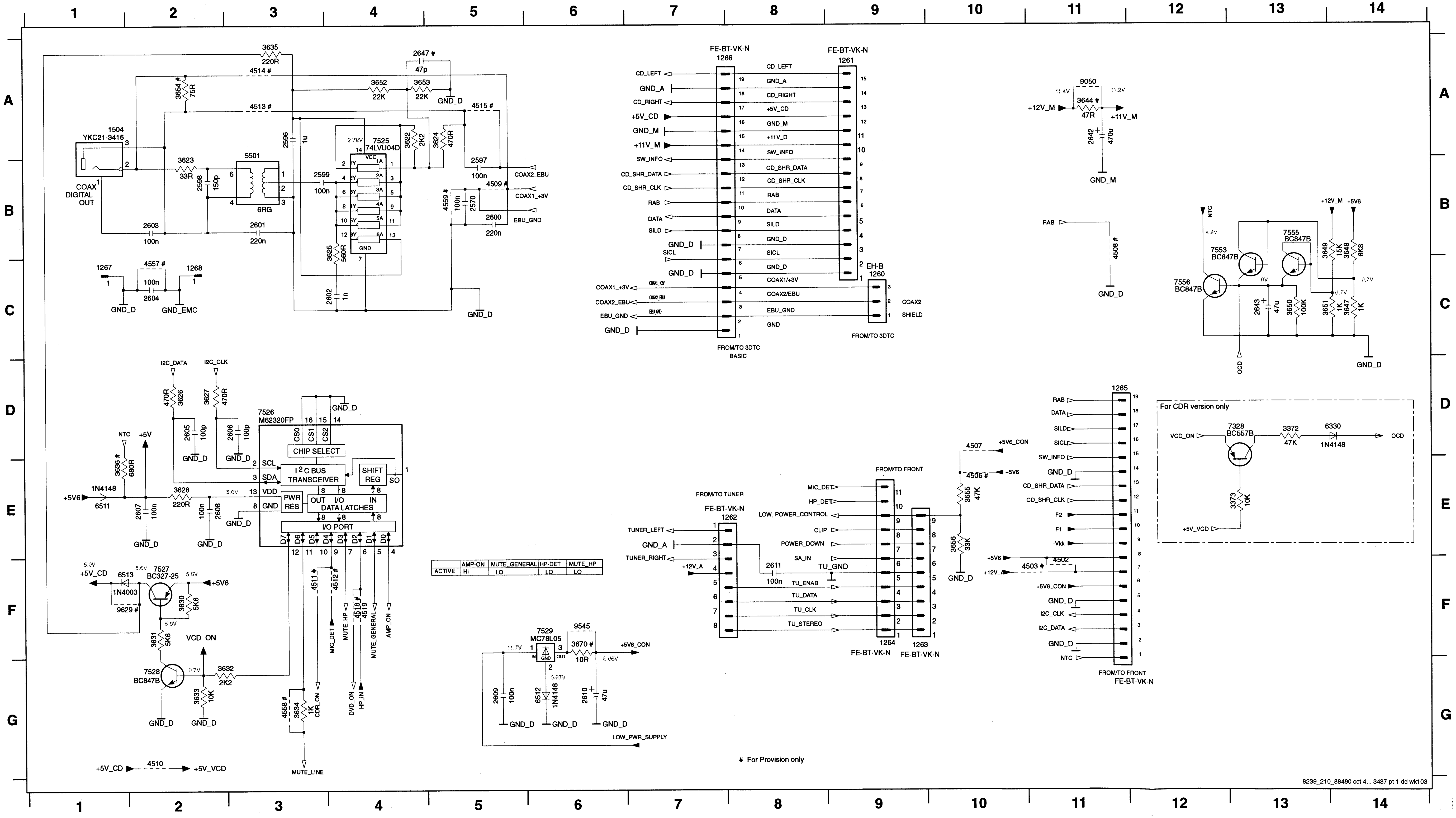
COMBI CIRCUIT - CONNECTOR & DIGITAL OUT PART

1260	C9
1261	A9
1262	E7
1263	F9
1264	F9
1265	D11
1266	A8
1267	C1
1268	C2
1504	A1
2570	B5
2596	A3
2597	B5
2598	B2
2599	B3
2600	B5
2601	B3
2602	C4
2603	B2
2604	C2
2605	D2
2606	D3
2607	E2
2608	E2
2609	G5
2610	G6
2611	F8
2642	A11
2643	C13
2647	A4
3372	D13
3373	E13
3622	A4
3623	B2
3624	A5
3625	B4
3626	D2
3627	D2
3628	E2
3630	F2
3631	F2
3632	G2
3633	G2
3634	G3
3635	A3
3636	E1
3644	A11
3647	C14
3648	B14
3649	B13
3650	C13
3651	C13
3652	A4
3653	A4
3654	A2
3655	E10
3656	E10
3670	F6
4502	F11
4503	F11
4506	E10
4507	D10
4508	B11
4509	B5
4510	G2
4511	F3
4512	F4
4513	A3
4514	A3
4515	A5
4518	F4
4519	F4
4557	C2
4558	G3
4559	B5
5501	A3
6330	D14
6511	E1
6512	G6
6513	F1
7328	D13
7525	A4
7526	D3
7527	F2
7528	G2
7529	F6
7553	B12
7555	B13
7556	C12
9050	A11
9545	F6
9629	F1


1 2 3 4 5 6 7 8 9 10 11 12 13 14
A B C D E F G
1504
YKC21-3416
COAX DIGITAL OUT
3635 220R
4514 #
4513 #
3654 # 75R
3623 33R
5501 6RG
2598 150p
2603 100n
2601 220n
2596 1u
2599 100n
7525 74LVU04D
3622 2K2
3624 470R
3625 560R
2602 1n
2647 # 47p
3652 22K
3653 22K
GND_D
4515 #
2597 100n
4509 #
4559 # 100n
2570
2600 220n
COAX2_EBU
COAX1_+3V
EBU_GND
1267 1268
4557 #
2604 100n
GND_EMC
FE-BT-VK-N 1266
FE-BT-VK-N 1261
CD_LEFT
GND_A
CD_RIGHT
+5V_CD
GND_M
+11V_M
SW_INFO
CD_SHR_DATA
CD_SHR_CLK
RAB
DATA
SILD
SICL
COAX1/+3V
COAX2/EBU
EBU_GND
GND
EH-B 1260
COAX2 SHIELD
FROM/TO 3DTC BASIC
FROM/TO 3DTC
9050
3644 # 47R
+12V_M
+11V_M
2642 470u
11.4V 11.2V
4508 #
7553 BC847B
7555 BC847B
7556 BC847B
3649 15K
3648 6K8
3651 1K
3647 1K
2643 47u
3650 100K
NTC
OCD
+12V_M +5V6
I2C_DATA
I2C_CLK
3626 470R
3627 470R
2605 100p
2606 100p
7526 M62320FP
CHIP SELECT
I²C BUS TRANSCEIVER
SHIFT REG
PWR RES
OUT I/O DATA LATCHES IN
I/O PORT
SCL SDA VDD GND SO
CS0 CS1 CS2
D7 D6 D5 D4 D3 D2 D1 D0
3636 # 680R
1N4148 6511
+5V6
3628 220R
2607 100n
2608 100n
7527 BC327-25
6513 1N4003
9629 #
3630 5K6
3631 5K6
+5V_CD
VCD_ON
7528 BC847B
3632 2K2
3633 10K
4511 #
4512 #
4518 #
4519
MIC_DET
MUTE_HP
MUTE_GENERAL
AMP_ON
DVD_ON
HP_IN
4558 #
3634 1K
CDR_ON
MUTE_LINE
4510
+5V_VCD
ACTIVE | AMP-ON HI | MUTE_GENERAL LO | HP-DET LO | MUTE_HP LO
7529 MC78L05
9545
3670 # 10R
+5V6_CON
2609 100n
6512 1N4148
2610 47u
LOW_PWR_SUPPLY
11.7V 5.86V
FROM/TO TUNER
FE-BT-VK-N 1262
TUNER_LEFT
GND_A
TUNER_RIGHT
+12V_A
2611 100n
TU_GND
TU_ENAB
TU_DATA
TU_CLK
TU_STEREO
FROM/TO FRONT
HP_DET
LOW_POWER_CONTROL
CLIP
POWER_DOWN
SA_IN
1264 FE-BT-VK-N
1263 FE-BT-VK-N
4507
4506 #
3655 47K
3656 33K
+5V6_CON
4503 #
4502
1265
F2 F1 -Vkk
FROM/TO FRONT FE-BT-VK-N
For CDR version only
7328 BC557B
3372 47K
6330 1N4148
3373 10K
VCD_ON
+5V_VCD
# For Provision only
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ELECTRICAL PARTS LIST - REGULATOR BOARD

MISCELLANEOUS

32	3139 111 01430	Spring Clip I/C
1171	4822 071 51002 ⚠	Fuse T1A 250V

CAPACITORS

2400	4822 124 22652	2,2μF 20% 50V
2402	4822 124 40433	47μF 20% 25V
2405	4822 124 11947	10μF 20% 16V
2406	4822 124 41643	100μF 20% 16V
2407	4822 124 41643	100μF 20% 16V
2408	4822 126 12882	100nF +80/-20% 50V
2409	4822 124 40248	10μF 20% 63V
2410	4822 126 12882	100nF +80/-20% 50V
2411	4822 124 12233	47μF 20% 25V

RESISTORS

3403	4822 050 11002	1k 1% 0,4W
3404	4822 116 52256	2k2 5% 0,5W
3405	4822 116 83876	270R 5% 0,5W
3406	4822 050 11002	1k 1% 0,4W
3411	4822 116 83883	470R 5% 0,5W
3415	4822 116 52199	68R 5% 0,5W
3416	4822 116 52206	120R 5% 0,5W
3417	4822 116 52206	120R 5% 0,5W
3418	4822 117 12063	10k 5% NTC DC 0,5W
3419	4822 116 52219	330R 5% 0,5W
3420	4822 050 11002	1k 1% 0,4W
3421	4822 052 10568	5R6 5% 0,33W
3422	4822 050 21003	10k 1% 0,6W

DIODES

6400	4822 130 30621	1N4148
6401	4822 130 30621	1N4148
6405	4822 130 61219	BZX79-B10
6406	4822 130 34174	BZX79-B4V7
6409	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7401	4822 130 40959	BC547B
7402	4822 130 44568	BC557B
7403	9322 139 23687	BDX53BFP
7408	4822 130 40959	BC547B
7409	4822 130 41246	BC327-25
7417	4822 209 31841	L7805CP

Note: Only the parts mentioned in this list are normal service spare parts.

ELECTRICAL PARTS LIST - COMBI BOARD

MISCELLANEOUS

33	3139 111 01430	Spring Clip I/C
1200	4822 267 31176	Loudspeaker Socket
1221	4822 267 10953	Flex Socket 7pin Vert.
1250	4822 267 10953	Flex Socket 7pin Vert.
1256	4822 267 10733	Flex Socket 4pin Vert.
1262	4822 265 11515	Flex Socket 8pin Vert.
1263	2422 025 14518	Flex Socket 9pin Vert.
1265	4822 265 11553	Flex Socket 19pin Vert.
1266	4822 265 11553	Flex Socket 19pin Vert.
1501	4822 265 20553	Aux-in Socket
1502	4822 267 31729	Sub-woofer Socket
1504	4822 267 31729	Digital Out Socket

CAPACITORS

2202	4822 122 33761	22pF 5% 50V
2203	4822 122 33761	22pF 5% 50V
2204	4822 126 12785	47nF +80/-20% 50V
2205	4822 126 12785	47nF +80/-20% 50V
2206	4822 121 42408	220nF 5% 63V
2207	4822 121 42408	220nF 5% 63V
2208	4822 121 42408	220nF 5% 63V
2209	4822 121 42408	220nF 5% 63V
2210	4822 126 12882	100nF +80/-20% 50V
2211	4822 124 81151	22μF 20% 50V
2212	4822 126 12882	100nF +80/-20% 50V
2213	4822 124 81151	22μF 20% 50V
2214	4822 122 10459	560pF 10% 50V
2215	4822 124 40769	4,7μF 20% 100V
2216	4822 124 40769	4,7μF 20% 100V
2217	4822 126 12882	100nF +80/-20% 50V
2500	4822 124 21913	1μF 20% 63V
2501	4822 124 21913	1μF 20% 63V
2502	4822 126 14305	100nF 10% 16V
2503	4822 126 14305	100nF 10% 16V
2504	4822 124 21913	1μF 20% 63V
2505	4822 124 21913	1μF 20% 63V
2508	4822 126 13881	470pF 5% 50V
2509	4822 126 13881	470pF 5% 50V
2510	4822 124 21913	1μF 20% 63V
2511	4822 124 21913	1μF 20% 63V
2518	4822 124 40769	4,7μF 20% 100V
2519	4822 124 40769	4,7μF 20% 100V
2520	4822 126 13881	470pF 5% 50V
2521	4822 126 13881	470pF 5% 50V
2522	4822 126 13881	470pF 5% 50V
2523	4822 126 13881	470pF 5% 50V
2524	4822 126 13881	470pF 5% 50V
2525	4822 126 13881	470pF 5% 50V
2526	4822 126 13881	470pF 5% 50V
2527	4822 126 13881	470pF 5% 50V
2528	5322 122 32261	4,7nF 10% 100V
2529	5322 122 32261	4,7nF 10% 100V
2530	4822 121 42408	220nF 5% 63V
2531	4822 121 42408	220nF 5% 63V
2532	4822 121 51252	470nF 5% 63V
2533	4822 121 51252	470nF 5% 63V
2534	4822 121 51252	470nF 5% 63V
2535	4822 121 51252	470nF 5% 63V
2536	5322 126 11579	3,3nF 10% 63V
2537	5322 126 11579	3,3nF 10% 63V
2538	3198 016 31020	1nF 5% 25V
2539	3198 016 31020	1nF 5% 25V
2540	5322 126 11583	10nF 10% 50V
2541	5322 126 11583	10nF 10% 50V
2542	3198 016 31020	1nF 5% 25V
2543	3198 016 31020	1nF 5% 25V
2544	5322 124 41948	470nF 20% 50V
2545	5322 124 41948	470nF 20% 50V
2547	4822 124 81286	47μF 20% 16V
2548	4822 122 33752	15pF 5% 50V
2549	4822 126 14305	100nF 10% 16V
2551	5322 124 41948	470nF 20% 50V
2559	4822 124 81286	47μF 20% 16V
2560	4822 126 14305	100nF 10% 16V
2561	4822 124 81151	22μF 20% 50V
2562	3198 017 34730	47nF 10% 16V
2563	4822 124 40196	220μF 20% 16V
2565	4822 124 80231	47μF 20% 16V
2566	4822 126 14305	100nF 10% 16V
2567	4822 122 31765	100pF 2% 63V
2568	4822 122 31765	100pF 2% 63V
2570	4822 126 14305	100nF 10% 16V
2571	5322 124 41948	470nF 20% 50V
2572	5322 124 41948	470nF 20% 50V
2573	4822 126 13883	220pF 5% 50V
2574	4822 126 13883	220pF 5% 50V
2575	4822 126 13881	470pF 5% 50V
2576	4822 126 13881	470pF 5% 50V
2577	4822 122 31765	100pF 2% 63V
2578	4822 122 31765	100pF 2% 63V
2579	4822 124 81151	22μF 20% 50V
2580	4822 124 81151	22μF 20% 50V
2581	4822 122 31765	100pF 2% 63V
2582	4822 122 31765	100pF 2% 63V
2585	4822 124 40769	4,7μF 20% 100V
2586	4822 124 40769	4,7μF 20% 100V
2587	3198 017 41050	1μF +80/-20% 10V
2588	4822 122 31765	100pF 2% 63V
2589	4822 126 13881	470pF 5% 50V
2590	4822 124 22833	10μF 20% 50V
2591	4822 124 81286	47μF 20% 16V
2592	4822 126 14494	22nF 10% 25V
2593	4822 124 40207	100μF 20% 25V
2595	4822 124 41796	22μF 20% 16V

ELECTRICAL PARTS LIST - COMBI BOARD

CAPACITORS

2596	3198 017 41050	1µF +80/-20% 10V
2597	4822 126 14305	100nF 10% 16V
2598	4822 122 33753	150pF 5% 50V
2599	4822 126 14305	100nF 10% 16V
2600	4822 126 13879	220nF +80/-20% 16V
2601	4822 126 13879	220nF +80/-20% 16V
2602	3198 016 31020	1nF 5% 25V
2603	4822 126 14305	100nF 10% 16V
2604	4822 126 14305	100nF 10% 16V
2605	4822 122 31765	100pF 2% 63V
2606	4822 122 31765	100pF 2% 63V
2607	4822 126 12882	100nF +80/-20% 50V
2608	4822 126 14305	100nF 10% 16V
2609	4822 126 12882	100nF +80/-20% 50V
2610	4822 124 81286	47µF 20% 16V
2611	4822 126 14305	100nF 10% 16V
2614	4822 126 14305	100nF 10% 16V
2615	4822 124 40769	4,7µF 20% 100V
2616	4822 124 40769	4,7µF 20% 100V
2642	4822 124 80791	470µF 20% 16V
2643	4822 124 81286	47µF 20% 16V
2645	4822 126 14305	100nF 10% 16V
2646	3198 017 34730	47nF 10% 16V

RESISTORS

3202	4822 117 12864	82k 5% 0,6W
3203	4822 117 12864	82k 5% 0,6W
3204	4822 051 30562	5k6 5% 0,063W
3205	4822 051 30562	5k6 5% 0,063W
3206	4822 050 21003	10k 1% 0,6W
3207	4822 050 21003	10k 1% 0,6W
3208	4822 050 21003	10k 1% 0,6W
3209	4822 050 21003	10k 1% 0,6W
3210	4822 116 81154	2R2 5% 0,5W
3211	4822 116 81154	2R2 5% 0,5W
3212	4822 116 81154	2R2 5% 0,5W
3213	4822 116 81154	2R2 5% 0,5W
3214	4822 116 52257	22k 5% 0,5W
3215	4822 116 83884	47k 5% 0,5W
3216	4822 116 52244	15k 5% 0,5W
3217	4822 116 52257	22k 5% 0,5W
3218	4822 116 52245	150k 5% 0,5W
3219	4822 116 52175	100R 5% 0,5W
3220	4822 116 83884	47k 5% 0,5W
3221	4822 116 83883	470R 5% 0,5W
3222	4822 116 52283	4k7 5% 0,5W
3223	4822 116 83883	470R 5% 0,5W
3224	4822 116 52219	330R 5% 0,5W
3225	4822 116 52249	1k8 5% 0,5W
3226	4822 116 52249	1k8 5% 0,5W
3227	4822 116 52249	1k8 5% 0,5W
3228	4822 117 13632	100k 1% 0.62W
3229	4822 116 83874	220k 5% 0,5W
3232	4822 051 30103	10k 5% 0,062W
3233	4822 051 30103	10k 5% 0,062W
3234	4822 117 13632	100k 1% 0.62W
3500	4822 051 30102	1k 5% 0,062W
3501	4822 051 30102	1k 5% 0,062W
3502	4822 051 30102	1k 5% 0,062W
3503	4822 051 30102	1k 5% 0,062W
3504	4822 117 12925	47k 1% 0.063W
3505	4822 117 12925	47k 1% 0.063W
3506	4822 117 11817	1k2 1% 1/16W
3507	4822 117 11817	1k2 1% 1/16W
3508	4822 051 30103	10k 5% 0,062W
3509	4822 051 30103	10k 5% 0,062W
3510	4822 051 30222	2k2 5% 0,062W
3511	4822 051 30222	2k2 5% 0,062W
3512	4822 051 30123	12k 5% 0,062W
3513	4822 051 30123	12k 5% 0,062W
3514	4822 051 30153	15k 5% 0,062W
3515	4822 051 30153	15k 5% 0,062W
3524	4822 051 30273	27k 5% 0,062W
3525	4822 051 30273	27k 5% 0,062W
3526	4822 051 30152	1k5 5% 0,062W
3527	4822 051 30152	1k5 5% 0,062W
3530	4822 117 12902	8k2 1% 0.063W
3531	4822 117 12902	8k2 1% 0.063W
3532	4822 051 30562	5k6 5% 0,063W
3533	4822 051 30562	5k6 5% 0,063W
3534	4822 051 30183	18k 5% 0,062W
3535	4822 051 30183	18k 5% 0,062W
3536	4822 051 30103	10k 5% 0,062W
3537	4822 051 30103	10k 5% 0,062W
3538	4822 051 30221	220R 5% 0,062W
3539	4822 051 30221	220R 5% 0,062W
3541	4822 051 30562	5k6 5% 0,063W
3542	4822 051 30562	5k6 5% 0,063W
3543	4822 117 12925	47k 1% 0.063W
3544	4822 117 12925	47k 1% 0.063W
3545	4822 051 30333	33k 5% 0,062W
3546	4822 051 30333	33k 5% 0,062W
3547	4822 051 30154	150k 5% 0,062W
3548	4822 051 30154	150k 5% 0,062W
3550	4822 116 83868	150R 5% 0,5W
3552	4822 051 30391	390R 5% 0,062W
3557	4822 117 11817	1k2 1% 1/16W
3558	4822 051 30334	330k 5% 0,062W
3559	4822 117 12864	82k 5% 0,6W
3566	4822 116 52289	5k6 5% 0,5W
3567	4822 051 30221	220R 5% 0,062W
3569	4822 051 30102	1k 5% 0,062W
3571	4822 051 30102	1k 5% 0,062W
3572	4822 051 30102	1k 5% 0,062W

ELECTRICAL PARTS LIST - COMBI BOARD

3573	4822 051 30109	10R 5% 0,062W
3574	4822 051 30109	10R 5% 0,062W
3575	4822 051 30123	12k 5% 0,062W
3576	4822 051 30123	12k 5% 0,062W
3579	4822 051 30682	6k8 5% 0,062W
3580	4822 051 30682	6k8 5% 0,062W
3581	4822 051 30273	27k 5% 0,062W
3582	4822 051 30273	27k 5% 0,062W
3583	4822 051 30332	3k3 5% 0,062W
3584	4822 051 30332	3k3 5% 0,062W
3587	4822 051 30339	33R 5% 0,062W
3588	4822 051 30339	33R 5% 0,062W
3589	4822 051 30479	47R 5% 0,062W
3590	4822 051 30479	47R 5% 0,062W
3591	4822 051 30102	1k 5% 0,062W
3592	4822 051 30102	1k 5% 0,062W
3593	4822 051 30102	1k 5% 0,062W
3594	4822 051 30102	1k 5% 0,062W
3595	4822 051 30102	1k 5% 0,062W
3596	4822 051 30102	1k 5% 0,062W
3598	4822 051 30102	1k 5% 0,062W
3599	4822 051 30562	5k6 5% 0,063W
3600	4822 051 30472	4k7 5% 0,062W
3601	4822 050 21003	10k 1% 0,6W
3602	4822 051 30103	10k 5% 0,062W
3604	4822 051 30102	1k 5% 0,062W
3605	4822 051 30562	5k6 5% 0,063W
3606	4822 050 21003	10k 1% 0,6W
3607	4822 051 30472	4k7 5% 0,062W
3609	4822 051 30103	10k 5% 0,062W
3610	4822 051 30153	15k 5% 0,062W
3611	4822 051 30562	5k6 5% 0,063W
3612	4822 051 30221	220R 5% 0,062W
3614	4822 051 30222	2k2 5% 0,062W
3615	4822 116 52283	4k7 5% 0,5W
3616	4822 116 52256	2k2 5% 0,5W
3617	4822 051 30102	1k 5% 0,062W
3618	4822 051 30102	1k 5% 0,062W
3619	4822 052 10109 ⚠	10R 5% 0,33W
3620	4822 116 52283	4k7 5% 0,5W
3621	4822 051 30472	4k7 5% 0,062W
3622	4822 051 30222	2k2 5% 0,062W
3623	4822 051 30339	33R 5% 0,062W
3624	4822 051 30471	470R 5% 0,062W
3625	4822 051 30561	560R 5% 0,062W
3626	4822 051 30471	470R 5% 0,062W
3627	4822 051 30471	470R 5% 0,062W
3628	4822 116 83872	220R 5% 0,5W
3630	4822 051 30562	5k6 5% 0,063W
3631	4822 051 30562	5k6 5% 0,063W
3632	4822 051 30222	2k2 5% 0,062W
3633	4822 051 30103	10k 5% 0,062W
3634	4822 051 30102	1k 5% 0,062W
3635	4822 116 83872	220R 5% 0,5W
3641	4822 051 30102	1k 5% 0,062W
3642	4822 051 30102	1k 5% 0,062W
3643	4822 051 30102	1k 5% 0,062W
3645	4822 051 30221	220R 5% 0,062W
3646	4822 051 30102	1k 5% 0,062W
3647	4822 051 30102	1k 5% 0,062W
3648	4822 051 30682	6k8 5% 0,062W
3649	4822 051 30153	15k 5% 0,062W
3650	4822 117 13632	100k 1% 0.62W
3651	4822 051 30102	1k 5% 0,062W
3652	4822 051 30223	22k 5% 0,062W
3653	4822 051 30223	22k 5% 0,062W
3655	4822 117 12925	47k 1% 0.063W
3656	4822 051 30333	33k 5% 0,062W
4502	4822 051 20008	0R Jumper 0805
4507	4822 051 20008	0R Jumper 0805
4510	4822 051 20008	0R Jumper 0805
4519	4822 051 20008	0R Jumper 0805
4531	4822 051 20008	0R Jumper 0805
4532	4822 051 20008	0R Jumper 0805
4533	4822 051 20008	0R Jumper 0805
4534	4822 051 20008	0R Jumper 0805
4536	4822 051 20008	0R Jumper 0805
4537	4822 051 20008	0R Jumper 0805
4538	4822 051 20008	0R Jumper 0805
4539	4822 051 20008	0R Jumper 0805
4540	4822 051 20008	0R Jumper 0805
4541	4822 051 20008	0R Jumper 0805
4542	4822 051 20008	0R Jumper 0805
4543	4822 051 20008	0R Jumper 0805
4545	4822 051 20008	0R Jumper 0805
4546	4822 051 20008	0R Jumper 0805
4547	4822 051 20008	0R Jumper 0805
4548	4822 051 20008	0R Jumper 0805
4550	4822 051 20008	0R Jumper 0805
4551	4822 051 20008	0R Jumper 0805
4552	4822 051 20008	0R Jumper 0805
4553	4822 051 20008	0R Jumper 0805
4554	4822 051 20008	0R Jumper 0805
4555	4822 051 20008	0R Jumper 0805
4560	4822 051 20008	0R Jumper 0805
4561	4822 051 20008	0R Jumper 0805
4562	4822 051 20008	0R Jumper 0805
4563	4822 051 20008	0R Jumper 0805
4564	4822 051 20008	0R Jumper 0805
4565	4822 051 20008	0R Jumper 0805
4567	4822 051 20008	0R Jumper 0805
4568	4822 051 20008	0R Jumper 0805
4569	4822 051 20008	0R Jumper 0805
4570	4822 051 20008	0R Jumper 0805

ELECTRICAL PARTS LIST - COMBI BOARD

RESISTORS

4571	4822 051 20008	0R Jumper 0805
4572	4822 051 20008	0R Jumper 0805
4573	4822 051 20008	0R Jumper 0805
4575	4822 051 20008	0R Jumper 0805
4576	4822 051 20008	0R Jumper 0805
4577	4822 051 20008	0R Jumper 0805
4578	4822 051 20008	0R Jumper 0805
4579	4822 051 20008	0R Jumper 0805
4580	4822 051 20008	0R Jumper 0805
4581	4822 051 20008	0R Jumper 0805
4582	4822 051 20008	0R Jumper 0805
4583	4822 051 20008	0R Jumper 0805
4584	4822 051 20008	0R Jumper 0805
4585	4822 051 20008	0R Jumper 0805
4586	4822 051 20008	0R Jumper 0805
4587	4822 051 20008	0R Jumper 0805
4588	4822 051 20008	0R Jumper 0805
4589	4822 051 20008	0R Jumper 0805

COILS & FILTERS

5200	4822 157 11837	Coil 8,5 Turn 0,36µH 10%
5201	4822 157 11837	Coil 8,5 Turn 0,36µH 10%
5202	4822 157 11837	Coil 8,5 Turn 0,36µH 10%
5203	4822 157 11837	Coil 8,5 Turn 0,36µH 10%
5500	4822 157 62552	Coil 2,2µH 5%
5501	2422 536 00019	Transformer 6RG

DIODES

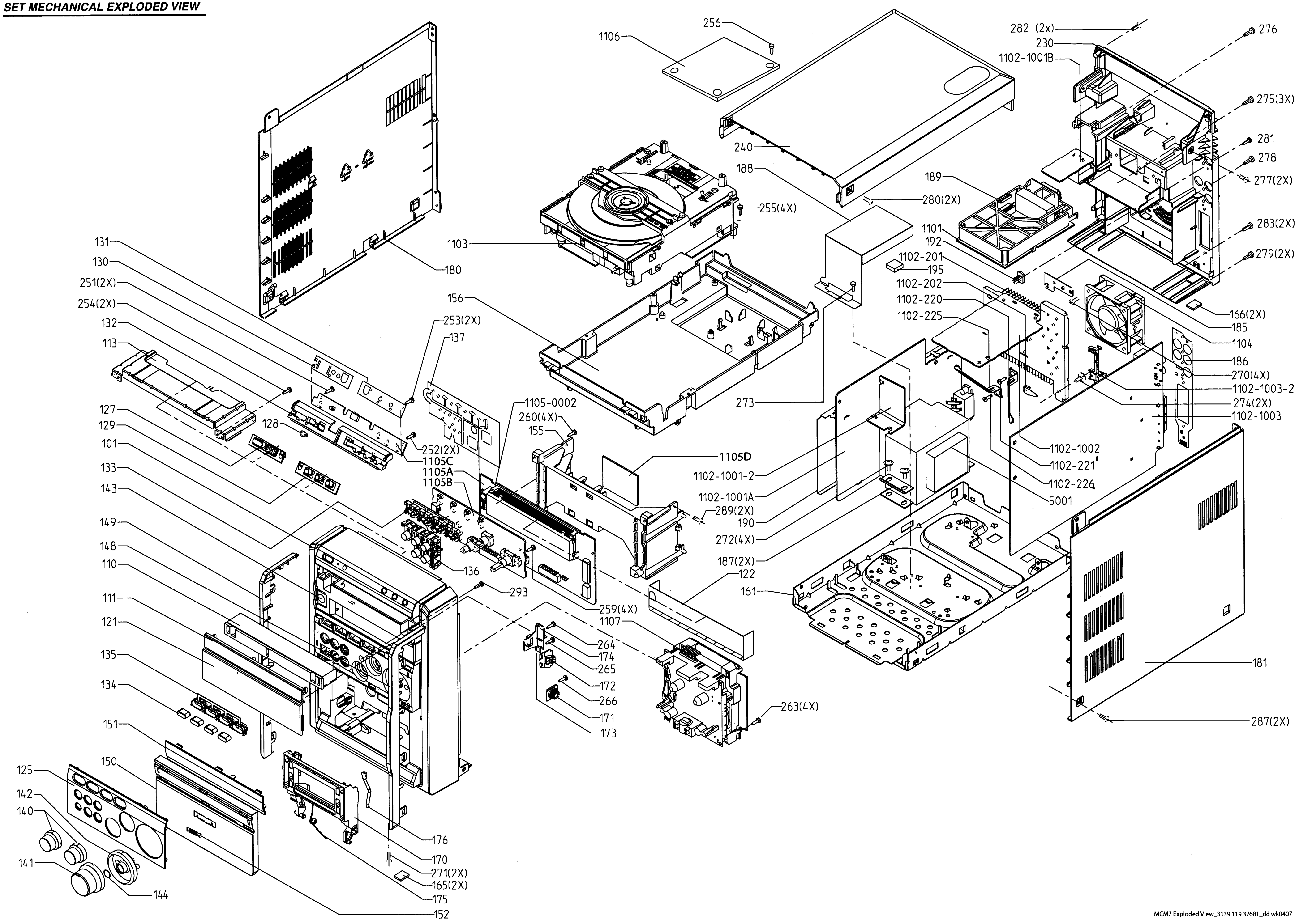
6200	4822 130 31878	1N4003G
6201	4822 130 31878	1N4003G
6202	4822 130 31878	1N4003G
6203	4822 130 31878	1N4003G
6204	9340 550 66112	BYV28-200/24
6205	4822 130 34441	BZX79-B22
6206	4822 130 30621	1N4148
6207	4822 130 34174	BZX79-B4V7
6208	4822 130 31024	BZX79-B18
6209	4822 130 34174	BZX79-B4V7
6508	4822 130 61219	BZX79-B10
6509	4822 130 30621	1N4148
6510	4822 130 30862	BZX79-B9V1
6511	4822 130 30621	1N4148
6512	4822 130 30621	1N4148
6513	4822 130 31878	1N4003G
6520	4822 130 30621	1N4148

TRANSISTORS & INTEGRATED CIRCUITS

7200	9322 133 18682	AN7125P
7201	4822 130 44568	BC557B
7202	4822 130 44568	BC557B
7203	4822 130 40959	BC547B
7204	4822 130 10847	BDW94C
7205	4822 130 40959	BC547B
7206	4822 130 44568	BC557B
7506	4822 130 60373	BC857B
7507	4822 130 60511	BC847B
7509	4822 130 60511	BC847B
7510	4822 209 31378	NJM4556MB
7511	4822 130 42804	BC817-25
7512	4822 130 42804	BC817-25
7514	4822 130 42804	BC817-25
7515	4822 130 42804	BC817-25
7516	4822 130 60373	BC857B
7517	4822 130 60511	BC847B
7518	4822 130 60511	BC847B
7519	4822 130 60373	BC857B
7520	4822 130 60511	BC847B
7521	4822 130 60511	BC847B
7522	4822 130 42804	BC817-25
7523	4822 130 42804	BC817-25
7524	4822 130 60373	BC857B
7525	4822 209 17235	74LVU04D
7526	4822 209 17345	M62320FP
7527	4822 130 41246	BC327-25
7528	4822 130 60511	BC847B
7529	4822 209 72042	MC78L05ACP
7540	4822 130 42804	BC817-25
7541	4822 130 42804	BC817-25
7550	9322 150 74668	TDA7468D
7553	4822 130 60511	BC847B
7555	4822 130 60511	BC847B
7556	4822 130 60511	BC847B

Note: Only the parts mentioned in this list are normal service spare parts.

SET MECHANICAL EXPLODED VIEW


256
1106
240
188
1103
255(4X)
280(2X)
180
131
130
251(2X)
254(2X)
132
113
127
129
101
133
143
149
148
110
111
121
135
134
151
150
125
142
140
141
144
152
175
165(2X)
271(2X)
170
176
156
253(2X)
137
128
252(2X)
1105C
1105A
1105B
136
293
1105-0002
260(4X)
155
1105D
289(2X)
259(4X)
122
1107
264
174
265
172
266
171
173
263(4X)
273
282 (2x)
230
1102-1001B
276
275(3X)
281
278
277(2X)
283(2X)
279(2X)
189
1101
192
1102-201
195
1102-202
1102-220
1102-225
166(2X)
185
1104
186
270(4X)
1102-1003-2
274(2X)
1102-1003
1102-1002
1102-221
1102-226
5001
1102-1001-2
1102-1001A
190
272(4X)
187(2X)
161
181
287(2X)

MECHANICAL & ACCESSORIES PARTS LIST - MAIN UNIT

0101	9940 000 00326	Cabinet Front	/22/25
0110	3139 254 00441	Cover CD Technical UL Loader	
0111	9940 000 00327	Cover CD	
0121	9940 000 00328	Window Display	/22/25
0125	9940 000 00329	Panel Control	
0127	9940 000 00331	Button Set Power Chrome	
0128	3139 114 79981	Lightguide Power Standby	
0129	9940 000 00332	Button Set RDS/News	
0132	3139 114 79921	Bracket Button RDS	
0133	3139 254 00071	Button Set Source	
0134	9940 000 00333	Cap Source Chrome	
0135	3139 114 79971	Lightguide Source	
0136	9940 000 00334	Button Set Function	
0140	3139 254 00051	Knob Bass/Treble Chrome	
0141	3139 254 00061	Knob Volume Chrome	
0142	3139 254 00001	Lightguide Volume	
0143	3139 114 79991	Lightguide IR	
0144	4822 492 51374	Ring	
0148	9940 000 00335	Frame Right	
0149	9940 000 00336	Frame Left	
0150	9940 000 00337	Cover Cassette	
0151	9940 000 00338	Panel Cassette	
0152	4822 459 10887	Badge Philips Assy	
0155	3139 114 79941	Bracket Combi	
0156	3139 114 79901	Bracket Module Mounting	
0165	3139 113 27140	Foot Rubber 4mm	
0166	3139 113 27140	Foot Rubber 4mm	
0170	3139 114 73930	Door Cassette ETF SD Left	
0171	4822 529 10322	Damper Assembly	
0172	3139 114 68640	Push Catch Left	
0173	4822 492 11344	Spring Compression	
0174	4822 402 11245	Bracket Left	
0175	3139 111 01390	Spring Torsion Left	
0176	4822 492 42787	Spring Cassette	
0180	9940 000 00339	Panel Left	/22/25
0181	9940 000 00341	Panel Right	/22/25
0192	3139 114 71010	Stopper Heatsink	
0230	9940 000 00342	Panel Rear	/22/25
0240	9940 000 00343	Cover Top	/22/25

0325	9940 000 00344		L/R Loudspeaker Box	
0331	2422 076 00546		Cable FM Aerial	/22/25
0332	2422 549 45067		Antenna AM Loop	
0333	3139 238 06511		Remote Control	
0336	2422 070 98151	⚠	Mains Cord	/22
0336	9965 000 07586	⚠	Mains Cord	/25
1104	2822 031 01494		Fan 12VDC 0.8W 3100RPM	
1106	3103 308 67611		PBAS 8 MP3CD03 TXT 5V	
5001	9940 000 04097	⚠	Mains Transformer	/22/25
8001	3139 110 35900		FFC Foil 07P/220/07P AD	
8003	3139 111 03871		FFC Foil 15P/280/15P BD Fold	
8004	3103 308 93622		CWAS FFC 98 19P BD	
8005	3139 110 35240		FFC Foil 08P/280/08P AD Fold	
8006	3139 110 35080		FFC Foil 09P/180/09P AD	
8007	3139 111 03881		FFC Foil 19P/180/19P AD Fold	
8009	3139 110 34840		FFC Foil 08P/100/08P AD	
8010	3140 110 20881		FFC Foil 15P/120/15P AD	
8011	3139 110 35090		FFC Foil 04P/340/04P BD	
8012	3139 110 34480		FFC Foil 07P/140/07P AD	
8013	4822 320 12752		FFC Foil 07P/180/07P AD	

Note : Only the parts mentioned in this list are normal service spare parts.

SCREW LISTS - MAIN UNIT

251	D2 x 8
252	D2 x 8
253	D2 x 8
254	D2 x 8
255	D3 x 20
256	D3 x 8
259	M3 x 12
260	D3 x 10
263	D3 x 12
264	D3 x 12
265	M3 x 12
266	M3 x 12
270	D3 x 35
271	M3 x 6
272	M3 x 10
273	M3 x 6
274	M3 x 10
275	D3 x 10
276	D3 x 10
277	D3 x 10
278	D3 x 10
279	M3 x 10
280	M3 x 10
281	D3 x 16
282	D3 x 12
283	D3 x 10
287	M3 x 10
289	D3 x 10
293	D2 x 8

REVISION LIST

Version 1.0 (3141 785 30060)
- Initial Release MCM5/22/25/37

Version 1.1 (3141 785 30061)
- Change Combi board assembly from production week 444 onwards.
- Page 12-1 to 12-12 : Combi board ass'y (for production week 444 onwards) are added
- Page 13-1 to 13-2 : Mechanical & Accessories parts list is adapted.

Version 1.2 (3141 785 30062)
- Page 13-2 : Mechanical & Accessories parts list is adapted.